

# Coal Age

FEBRUARY, 1946



COAL MINING PLANS FOR PROGRESS  
PAGE 84



**OVER 90% WANT *Cleaner COAL!***

## **COALKOTE's "Sealed Protection"**

**Answers this gigantic consumer-demand for modern dust-proofed coal**

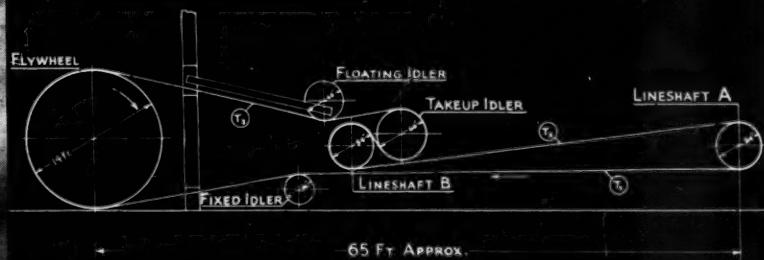
Housewives of the nation . . . the "consumer purchasers" of your product . . . want, and will make it a point to purchase cleaner fuels in the future. That's why, in more than a thousand consumers questioned, 94% said they would demand treated coal from their dealers.

You, the operator, must meet this demand now if you are interested in protecting your future markets. And you can meet and beat competition with COALKOTE'S Sealed Protection. It effectively seals the dust to the larger pieces of coal. Cuts dirt, dust, and grime to a minimum. Is easily applied at exceptionally low cost when you consider the increased sales appeal it adds to every ton of coal you mine.

Today is the time to get facts on this modern way of treating coal. Today is the time for you to start winning new customers. If you want to be convinced of the increasing demand for treated coal — by dealer, industry and consumer — get your free copy of one of the industry's most revealing surveys on this subject — write . . .

**SUN OIL COMPANY • Philadelphia 3, Pa.**  
Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas

**SUN**  
**SUNOCO**  
**INDUSTRIAL**  
**PRODUCTS**



## 33 buzz saws ganged up on this belt

*A typical example of B. F. Goodrich development in rubber*

IN THIS Southern hard wood lumber mill, 33 saws—band saws, edgers, slashers, trimmers—cut the logs into boards of the right length and width. All these saws are driven by one belt. But the constant strain and the sharp turns in the drive stretch the belt. And if it stretches too far, the mill shuts down while the belt is cut apart, shortened and the ends fastened together again.

They used to use expensive leather belts in this mill—belts that wore for only 5 years and stretched so badly

they had to be shortened 2 or 3 times a year. Then the mill owner heard of a transmission belt called Highflex—developed by B. F. Goodrich—that is especially constructed to resist stretching and can be made endless on the job. A B. F. Goodrich belt—48 inches wide—was installed at less than half the cost of a leather belt. In exactly the same service it lasted—not 5 years—but eight, and had to be shortened only once in its entire life.

The mill owner's records showed that the leather belt had cost him \$1040 per year of service; the B. F.

Goodrich belt only \$300 per year.

These savings—resulting directly from the superior performance of a B. F. Goodrich belt—are typical of similar savings that can be made in all industry with almost any B. F. Goodrich product—whether it's belting or hose or any of the 35,000 rubber products that are constantly being improved by B. F. Goodrich research. *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

**B. F. Goodrich**  
RUBBER and SYNTHETIC products

# First in its Field . . .



## THE FIRST MILESTONE

The first milestone erected in America was one of a series marking the 19 miles away from Philadelphia toward Trenton. It was set up in May, 1764, at Front and Market Streets, by the Directors of an Insurance Company known as "The Philadelphia Contributionship for the Insurance of Houses from Loss by Fire." The stones were paid for by "fines" levied on members for absence from Company meetings, which were held at five o'clock in the morning.

It was indeed a "milestone" in the history of Coal Mine Lubrication when Hulbert Quality Grease was produced in Philadelphia. It was, and continues to be, the result of research, not only by laboratory workers, but by Hulbert Engineers right down in the mines, working with operators. Remember, the absence of the RIGHT lubricating grease can levy a heavy "fine" on operating profits. Increase profits with Hulbert Quality Grease.

HULBURT OIL & GREASE COMPANY . . . PHILADELPHIA, PENNA.

*Specialists in Coal Mine Lubrication*

*...a record of*  
*American Leadership*



**HULBURT**

THE  
"FIRST NAME"  
IN

*Quality*  
**GREASE**

There's **MULTIPLE PROTECTION** in these  
**UNDERGROUND CABLES**



**E**very Hazard underground cable is thoroughly protected against moisture, acids and alkalis as well as mechanical injury. Buried underground, frequent inspection or repair is out of the question, because of high cost and long service interruption.

With Hazard PARKWAY cable, multiple protection includes a lead sheath over the insulated conductors and two overlapping layers of steel tape with a layer of asphaltated jute tape under and over, for mechanical protection.

With Hazard ARMORTITE cable, insulated conductors are sealed inside a tough, leather-like armor combined with other coverings of asphaltated jute, plastic sealing compounds and rubber faced tapes, making the cable lighter in weight and lower in cost than the metallic armored Parkway cable. Extensively used for power transmission and distribution.

Underground cables, portable cables, locomotive reel, shaft and borehole and other mining cables have been produced for half a century by Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

**HAZARD**   
**insulated wires and cables**  
**for every mining use**

# Coal Age

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330 West 42d St., New York 18, N. Y.

Please change the address of my COAL AGE subscription as follows:

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Old Address .....

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# SLOPE BELTS

## *make 23-year record*



**Handle 6,612,638 tons  
before first replacement**

The super-economy and dependability of slope conveyor belts in mine haulage are strikingly demonstrated by the record of one of the nation's oldest installations serving a West Virginia coal company.

This veteran conveyor was installed in 1923 on specification of the G.T.M.—Goodyear Technical Man. It travels downhill from the portal on the mountainside to the rail tipple—a total run of 1,868 feet with a net drop of 448 feet. It consists of two flights of Goodyear 8-ply conveyor belting, 36" wide, operating at 150 F.P.M. and carrying 150 tons per hour.

Today, after 23 years' continuous service in which 6,612,638 tons of mine-run coal

GOODYEAR

have been handled, one of these original belts has at long last reached the point of replacement—and in all these years it has required only minor repair.

## SPECIFY "COAL-FLO" UNDERGROUND

Outstanding as this performance record is, it is only a sample of what may be expected from Goodyear belts today. Since 1923, Goodyear has pioneered numerous improvements in belt design and construction that make still larger tonnages and longer hauls a certainty.

First among these is the Goodyear line of "Coal-Flo" belts—first choice for underground operations because of their resistance to mildew and mine acids that insures far longer life. "Coal-Flo" belts are equally standout in resisting edge-wear, cutting, stripping and bruising, thanks to exclusive construction features.

Best proof is the fact that of many hundreds of thousands of feet of Goodyear belts in coal service underground, more than 95% are still in use after 6 to 8 years on the job. That's why it will pay you to consult the G.T.M., if you want lowest cost haulage. Write: Goodyear, Akron 16, Ohio, or Los Angeles 54, California.

**GM-Specified**

**SLOPE-BELT CONVEYOR SYSTEM**

FOR HOSE, BELTING,  
MOLDED GOODS,  
PACKING

built to the world's  
highest quality standard,  
phone your  
nearest Goodyear  
Industrial Rubber  
Products Distributor.

"Coal-Flo" - T.M. The Goodyear Tire & Rubber Company

**INDUSTRIAL RUBBER PRODUCTS**

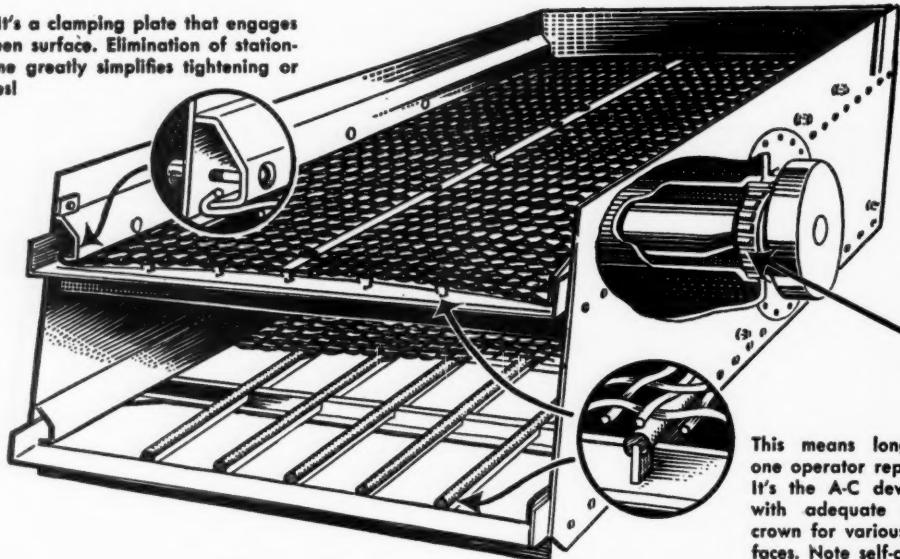
# EAR

**THE GREATEST NAME  
IN RUBBER**

# "Low Cost-- High Capacity!"

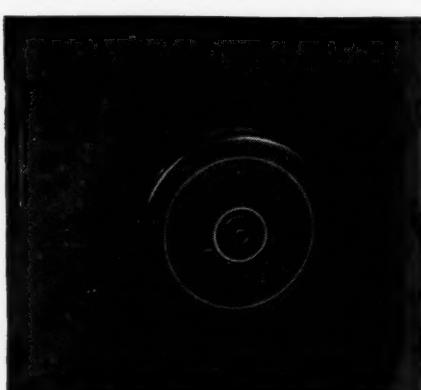
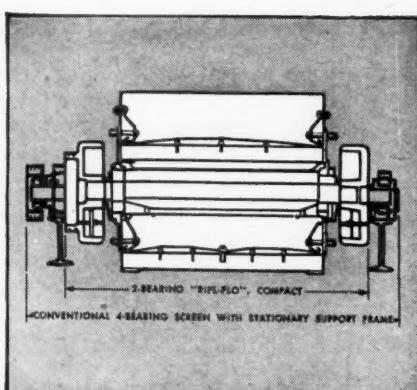
THAT'S THE STORY IN A NUTSHELL ABOUT AMERICA'S  
NO. 1 VIBRATING SCREEN--THE "RIPL-FLO"!

This saves time! It's a clamping plate that engages and tensions screen surface. Elimination of stationary support frame greatly simplifies tightening or changing surfaces!



This means low initial cost, low power consumption, low maintenance! Only 2 bearings are required to impart perfect circle motion to screen surface and body!

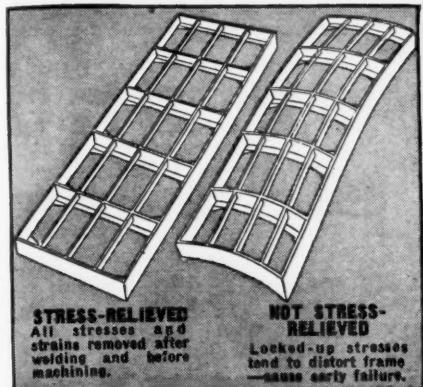
This means longer wire cloth life—one operator reports up to double life! It's the A-C developed support frame with adequate strength and proper crown for various grades of screen surfaces. Note self-clamping, wear-resisting rubber buffer strips that "cushion" screen surface from frame.



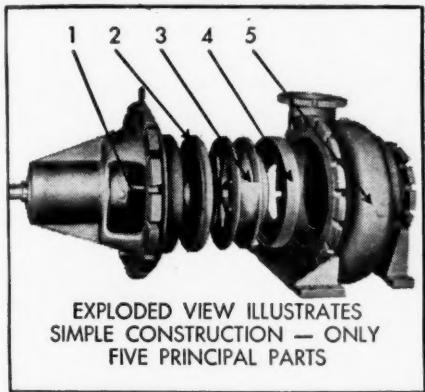
**1** Fact is, 2-bearing "Ripl-Flo" costs less than any comparable 4-bearing screen—yet does as good or better screening job! One reason we can build it for less, pass savings to you is that . . .

**2** Extra outer bearings, stationary support frame, all superfluous parts are eliminated—reducing width 17%, weight 36%! This, coupled with perfect balance, cuts amount of power required.

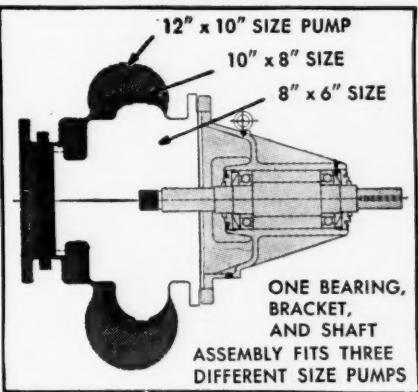
**3** Yes, Ripl-Flo's perfectly balanced mechanism means smooth performance, uniform travel of material over entire surface, rapid stratification of bed, full capacity! Want low maintenance?



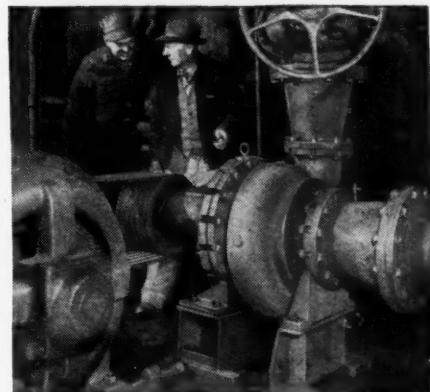
**4** Screen body is high tensile strength alloy steel (up to 50% stronger than regular steel). All welded parts are "stress-relieved" to eliminate structural failures—give extra years of screen life!



**5** Before it can go out to do a job for you, every "Ripl-Flo" screen must pass a tough, 2 hour "exam." Running in a special test rig, it's checked for throw, balance, bearing temperature, etc.



**6** The customer gets his choice at A-C—can select from 8 different types of screens! Want more details on modern, up-to-date Ripl-Flo—1 to 4 decks? Send for Bulletin B6151B.



**7** Another A-C help is the new "Solids-Handling" pump—that promises 2 to 4 times longer life—cuts parts inventory much as 2/3—materially reduces downtime! It's so designed that . . .

**8** You can remove entire rotating element without disturbing piping—take apart, re-assemble entire pump fast as 1/2 hour! And, it is comparable in price to ordinary high efficiency pumps.

**9** Here's what one operator reports: "Downtime cut 400%; power savings \$7 day; parts inventory cut 70%!" Want a new low cost per ton of solids pumped? Get Bulletin B6381.

## GET THIS "TEAM-UP" FROM ONE SOURCE!

Equip your plant with *basic machinery plus* economical power equipment to *run it*—get it all from *1 company*! Yes, A-C not only builds screens, crushers, grinding mills, kilns, etc.—but also power generation, distribution and control equipment—motors, pumps, blowers, compressors, Tex-rope V-Belt drives—over 1600 different products for you!

A-1968

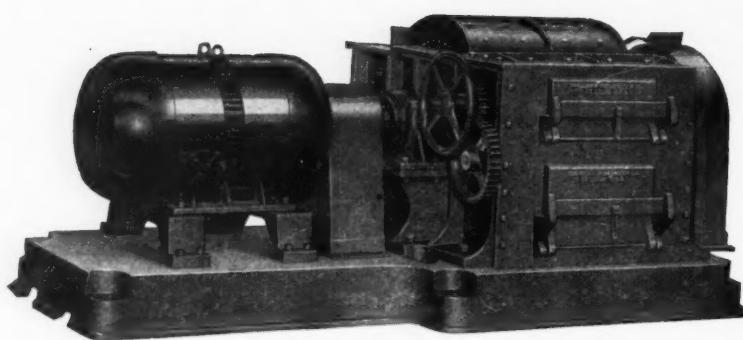
# ALLIS-CHALMERS

PRODUCER OF WORLD'S LARGEST LINE OF  
CRUSHING, CEMENT & MINING EQUIPMENT!



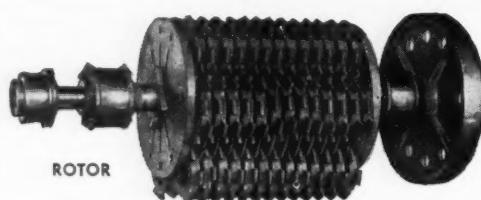
MILWAUKEE,  
WISCONSIN

# TONNAGE GOES UP and FINES GO DOWN with

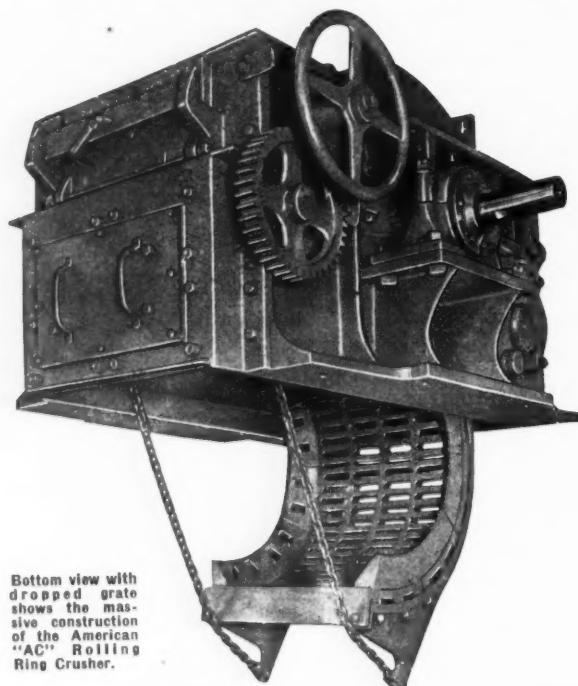
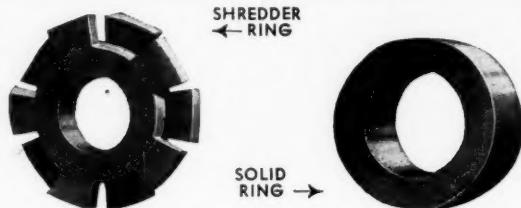


## AMERICAN *Rolling Ring* CRUSHERS

*For uniform sizing  
Americans split coal  
instead of crushing it*



The manganese shredder rings, with their 20 cutting edges, revolve freely on the rotor at powerful centrifugal force—split coal instead of crushing it. They deflect unharmed from tramp metal.



Bottom view with dropped grates shows the massive construction of the American "AC" Rolling Ring Crusher.

Americans use of many shredder rings, each with 20 cutting edges, provides a high striking ratio to coal passing into the crushing chamber—resulting in high tonnage output—capacities up to 500 TPH.

American AC Crushers employ full centrifugal force through the use of multiple shredder rings, revolving on their own shafts with tremendous centrifugal force—in addition to being driven with the rotor's powerful centrifugal action. This efficient use of centrifugal force accounts for American's low power demand—approximately  $\frac{1}{2}$  HP per ton!

The cutting edges of the shredder rings, split coal instead of crushing it. Fines are held to a minimum—regardless of the range of reduction or type of operation, one step or circuit.

Only Americans have the patented shredder rings. This highly efficient action affords high production with a higher percentage of marketable sizes.

Ask any of the many who operate Americans.

*Send for the American "AC" Bulletin for details and full specifications.*

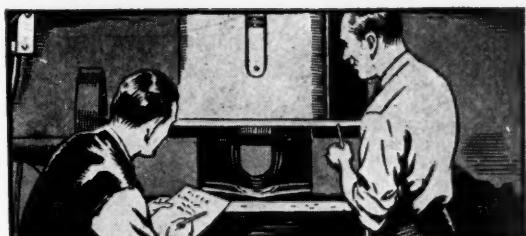
**American** **PULVERIZER COMPANY**

*Originators and Manufacturers of  
Ring Crushers and Pulverizers*

1119 Macklind Ave.  
St. Louis 10, Mo.



Maybe our test engineers don't wear as mean an expression as the kangaroo when they start hammering U. S. Royal Cords and Cables, but the punishment they hand out is a lot harder to take. The way nice new "U. S. Royal" gets treated in that laboratory is a caution. The technical boys beat it, twist it, stretch it, heat it, freeze it and soak it in water. But when all that is over we know the name "U. S. Royal" assures you the finest safety-tested cords and cables that can be produced.



**This is the Impact Test.** A 27½-pound steel hammer with a 1-inch diameter impact foot, falls 7 inches, repeatedly smacking the cable for as many as 2,000 times.

**SPECIFY THE NEW U. S. ROYAL *Safety Tested* MINING MACHINE AND LOCOMOTIVE CABLE**  
**UNITED STATES RUBBER COMPANY**



1230 AVENUE OF THE AMERICAS • ROCKEFELLER CENTER • NEW YORK 20, N. Y.  
 SERVING THROUGH SCIENCE WITH ELECTRICAL CORDS AND CABLES

# 6

# TESTS PROVE . . .

TEXACO REGAL STARFAK EXCEEDS EVERY REQUIREMENT  
FOR AN IDEAL ANTI-FRICTION BEARING LUBRICANT

TEST	REGAL STARFAK EXCEEDS REQUIREMENTS BY	BENEFIT TO YOU
Norma-Hoffman Oxidation Test: Measures stability of lubricating qualities. Test run for 100 hours at 210 F.	40%	Greater resistance to oxidation and gum formation
Mechanical Worker Test: Measures consistency stability. Grease worked in ASTM mechanical worker for 100,000 strokes.	23.2%	Longer lubricating life.
Beater Test: Measures degree to which grease picks up air. Grease is beaten by eggbeater type mixer for 1 hour at 1000 rpm.	85.3%	Higher resistance to leakage and separation.
High Temperature Performance Test: Grease must lubricate ball bearing satisfactorily for not less than 1000 hours, at 10,000 rpm and 250 F.	89.8%	Greater protection against high bearing temperatures.
Low Temperature Torque Test: Measures ability of grease to lubricate satisfactorily at low temperatures. Test run at -40 F.	90%	Easier starting, lower power consumption.
Water Resistance Test: Ball bearing must operate under water jet for 1 hour with no more than 50% grease loss.	100%	Greater protection against washout.

TUNE IN THE  
TEXACO STAR THEATRE  
WITH JAMES MELTON  
SUNDAY NIGHTS—  
METROPOLITAN OPERA  
BROADCASTS SATURDAY  
AFTERNOONS



# TEXACO LUBRICANTS

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS

# Positive Protection for Ball and Roller Bearings

GREASE-LUBRICATED ball and roller bearings of electric locomotives, cutters, loaders, shuttle cars and similar equipment last longer, operate more smoothly, require less service, when lubricated with *Texaco Regal Starfak*. You save materially on maintenance costs.

The superior performance of *Texaco Regal Starfak* is proved not only by the tests described on the opposite page, but in actual service as well — as is indicated by the already wide and constantly increasing use of *Regal Starfak* by mine operators in all parts of the country.

For Texaco Products and Engineering Service, call the nearest of the more than

2300 Texaco distributing plants in the 48 States, or write The Texas Company, *National Sales Division, Dept. C*, 135 East 42nd Street, New York 17, N. Y.

**FREE!** Texaco Maintenance Lubrication Charts are prepared in cooperation with leading manufacturers of underground mining machinery who approve Texaco products for use on cutters, loaders, locomotives, etc. Charts show clearly where and when to use the proper Texaco lubricant. Order the charts you need by make and model of each machine.

## For the Coal Mining Industry

METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS



*Compare the OLD*

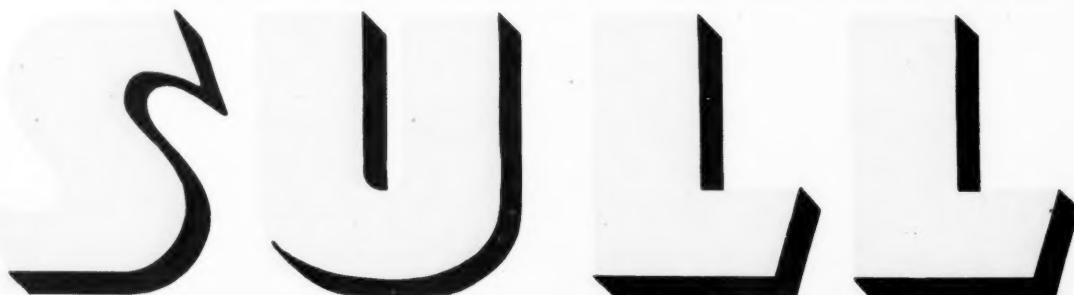
Many years ago, the Brazilians discovered that by cutting vertical "slots" by hand in tabular volcanic material, they could quickly break the solid mass for loading into horsedrawn carts. And today's low-cost mines still take advantage of the benefits that result from shearing.

THE SULLIVAN 10 RU WILL CUT ANY PART OF THE FACE, VERTICALLY AND HORIZONTALLY . . . RESULTING IN MORE TONS PER LOADING MACHINE, LOWER POWDER COSTS, BETTER TOP AND MORE TONS PER MAN.

Sullivan Machinery Company — General Offices — Michigan City, Indiana

**OFFICES:**

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Denver, Colo.  
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Pittsburgh, Pa.  
Seattle, Wash.  
San Francisco, Calif.  
Salt Lake City, Utah  
Scranton, Pa.  
St. Louis, Mo.



**IF YOUR COAL CUTTER IS NOT KEEPING UP**

R ING



and the **NEW**

**THE SULLIVAN 10-RU WILL CUT AND SHEAR AHEAD OF THE LARGEST-CAPACITY LOADERS . . . . . here's why!**

Fast trammimg with hydraulic drive motors

Fast trammimg over any kind of bottom

Two-wheel hydraulic steering

Short wheel base

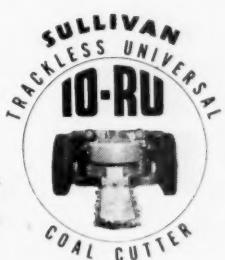
Centralized dual control

Floating rear axle

Four pneumatic tires

Simple rugged design

UNIT ASSEMBLY, ALLOWING UNIT OVERHALL AT THE FACE AND ONLY ONE GEAR REDUCTION FROM A SLOW-SPEED, HEAVY-DUTY CUTTING-MOTOR . . . CONTRIBUTE TO LOWER MAINTENANCE COSTS.



In Canada: Canadian Sullivan Machinery Company, Ltd., Dundas, Ontario



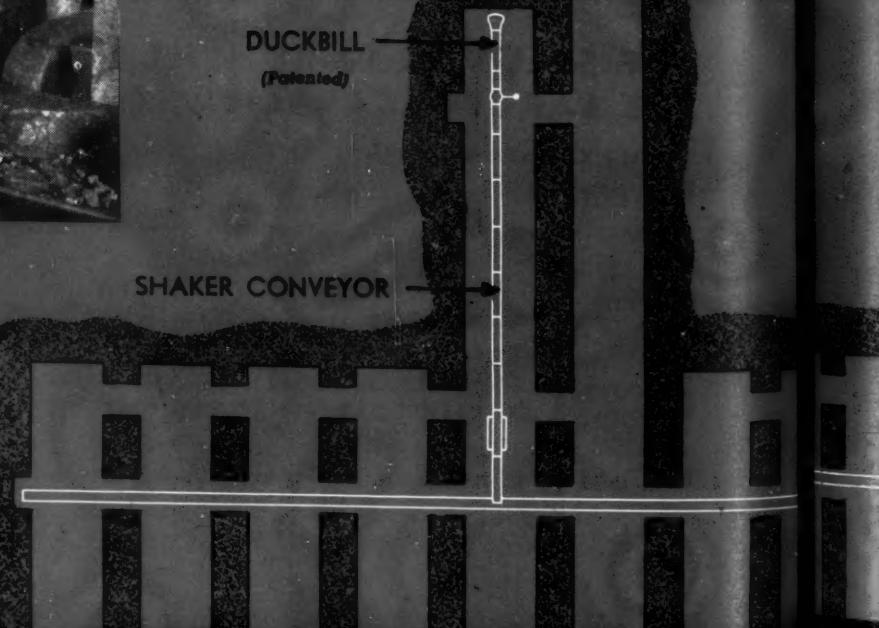
**WITH YOUR LOADER . . . Call in a SULLIVAN Engineer**

**SULLIVAN PRODUCTS**  
Coal Mining Machines  
Slushers - Rock Loaders  
Portable Hoists  
Car Pullers  
Room Hoists  
Coal Drills  
Air Compressors  
Rock Drills  
Cutter Bit Sharpeners  
and Heaters  
Core Drills and Contract  
Core Drilling

# Greater Effective Loading Time with the **GOODMAN DUCKBILL-**



The motion imparted to the conveyor line by the drive unit is controlled to operate the Duckbill at the face and also moves the coal in a continuous flow to be discharged onto a belt conveyor.



**GOODMAN MANUFACTURING COMPANY**  
Wilkes-Barre • Pittsburgh • Huntington • Terre Haute

# SHAKER CONVEYOR

## *System of Mining*

At this installation each room is driven by the Duckbill-Shaker Conveyor beyond the next belt entry so that Duckbill loading is continuous at all times. Belts are located on either side of the panel entry and 18 rooms are worked out before each move of the belt.

This plan is one of many in operation today that permits full advantage of Duckbill-Shaker economies. A Goodman Sales Engineer will be glad to give you details of this or the plan best suited to your requirements.



**HALSTED STREET AT 48TH • CHICAGO 9, ILLINOIS**

Birmingham

Denver

Salt Lake City

# OLD MAN COMPETITION...



PACEMAKER IN  
WIRE PRODUCTS

**ROE**

# IS GETTING READY

***The right wire rope can  
help you keep costs down!***

The heyday of high production, with cost a secondary consideration, is over.

All industrial equipment and supplies will have to be purchased with their cost-cutting possibilities a prime consideration. Equipment must *save* while it *serves!*

Wire rope in your business must do its part in cutting overhead too. Meeting competitive business, equipped with Roebling "Blue Center" Steel Wire Rope, is a *sure* step in this direction. The staying power and reserve strength of *any* Roebling Wire Rope, regardless of its type, is real economy over a long period of operation.

Unsurpassed facilities, research and practical

engineering of America's pioneer wire rope maker, assure you top service in installation or maintenance. Roebling Wire Rope will help to remove the danger of costly shutdowns due to replacements . . . will help you profitably meet the coming years of competition.

#### JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

*Branches and Warehouses in Principal Cities*

WIRE ROPE AND STRAND • FITTINGS • SLINGS  
COLD ROLLED STRIP • AERIAL WIRE ROPE SYSTEMS  
ROUND AND SHAPED WIRE • SUSPENSION BRIDGES  
AND CABLES • WIRE CLOTH AND NETTING • HIGH  
AND LOW CARBON ACID AND BASIC OPEN  
HEARTH STEELS • ELECTRICAL WIRES AND CABLES  
AIRCORD, SWAGED TERMINALS AND ASSEMBLIES



Worried about higher costs for your

"expendable" supplies?  switch to **MOROPA**

DRY-TREATED JUTE BRATTICE CLOTH to enjoy real economies

## HERE ARE **3** REASONS WHY

leading operators are standardizing on **Moropa**

**1. LONGER SERVICE** Since *all* brattice cloth is sooner or later ripped down and "expended", the cloth with the longest life pays the largest dividends and cuts your operating costs continuously.

**2. EASIER HANDLING** Brattice men prefer MOROPA JUTE because it remains drier longer and does not accumulate slime. They willingly reclaim and re-hang MOROPA because of its clean appearance and strength, even after long service underground.

**3. NO EFFICIENCY LOSS** The famous and exclusive MOROPA treatment is actually *baked* into the fibres of MOROPA'S strong yarns, so thoroughly impregnating the fire and fungus-resisting chemicals that they do not readily leach out.

## **MOROPA JUTE**

AVAILABLE IN ALL STANDARD WIDTHS AND WEIGHTS

Manufactured and distributed only by

**JOHN FLOCKER AND COMPANY**  
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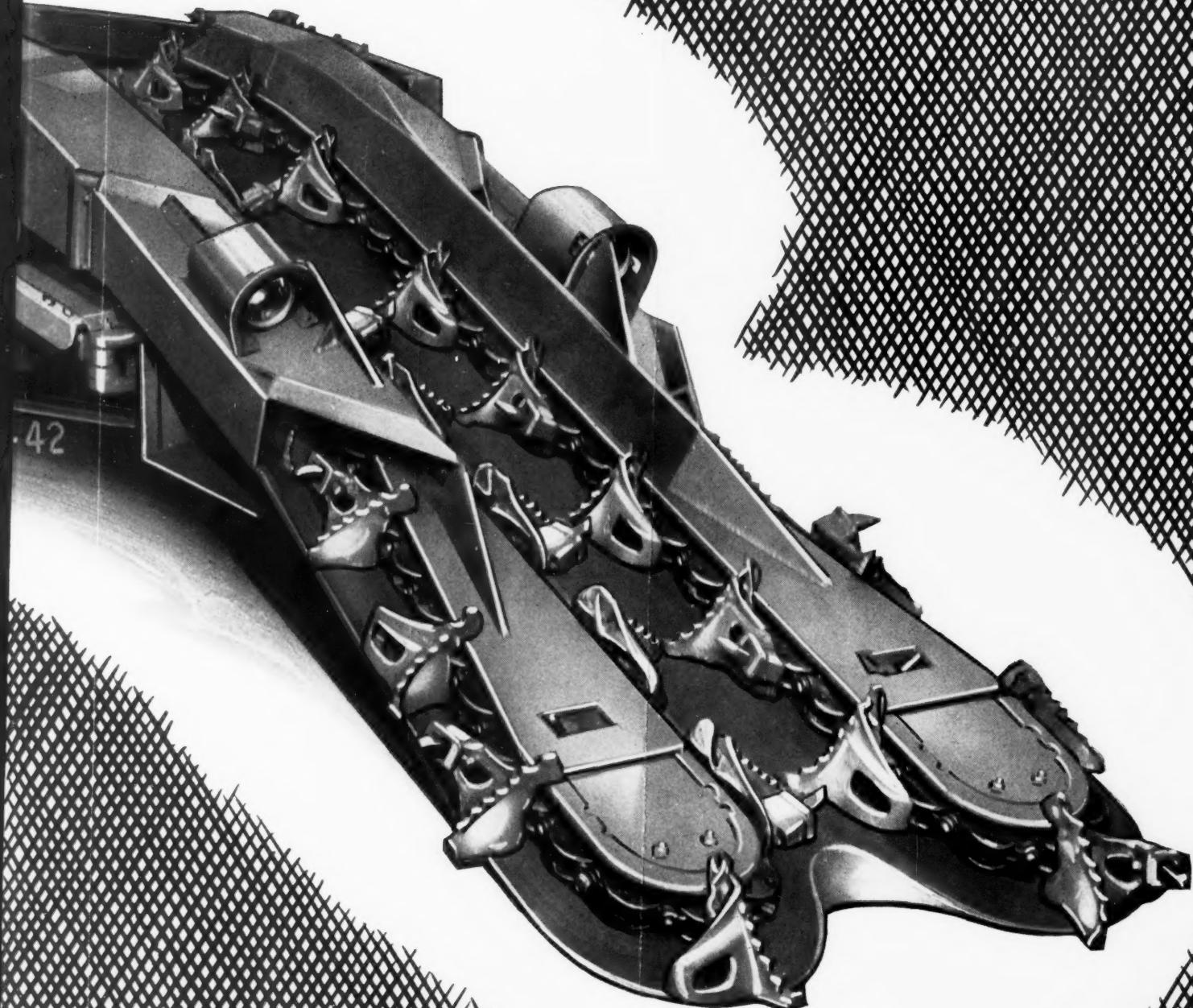
Since 1822, Ropes, Slings, Nets and Cordage Fittings, Tackles, Industrial Twines  
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# JEFFREY UN



Mechanical loading under all conditions can be made profitable with Jeffrey loading machines. Illustrated is the Jeffrey L-600 frontal-attack track-mounted loader (patented). Capacity is there when needed . . also flexibility. It is equipped with finger-tip hydraulic control and automatic cable reel to speed its movements.

# Y UNDERGROUND LOADERS



# time



us

eds.

time, labor  
it cleaning  
so effective  
at ordinary

6" reduces  
minutes on  
all kinds of  
wash or spray  
hot water.

ature and  
onstration





# Did you

That the coal byproduct—phenol, commonly known as carbolic acid, in addition to being one of the most important disinfectants is also the basic chemical in the manufacture of some explosives, plastics and nylon.

# know?

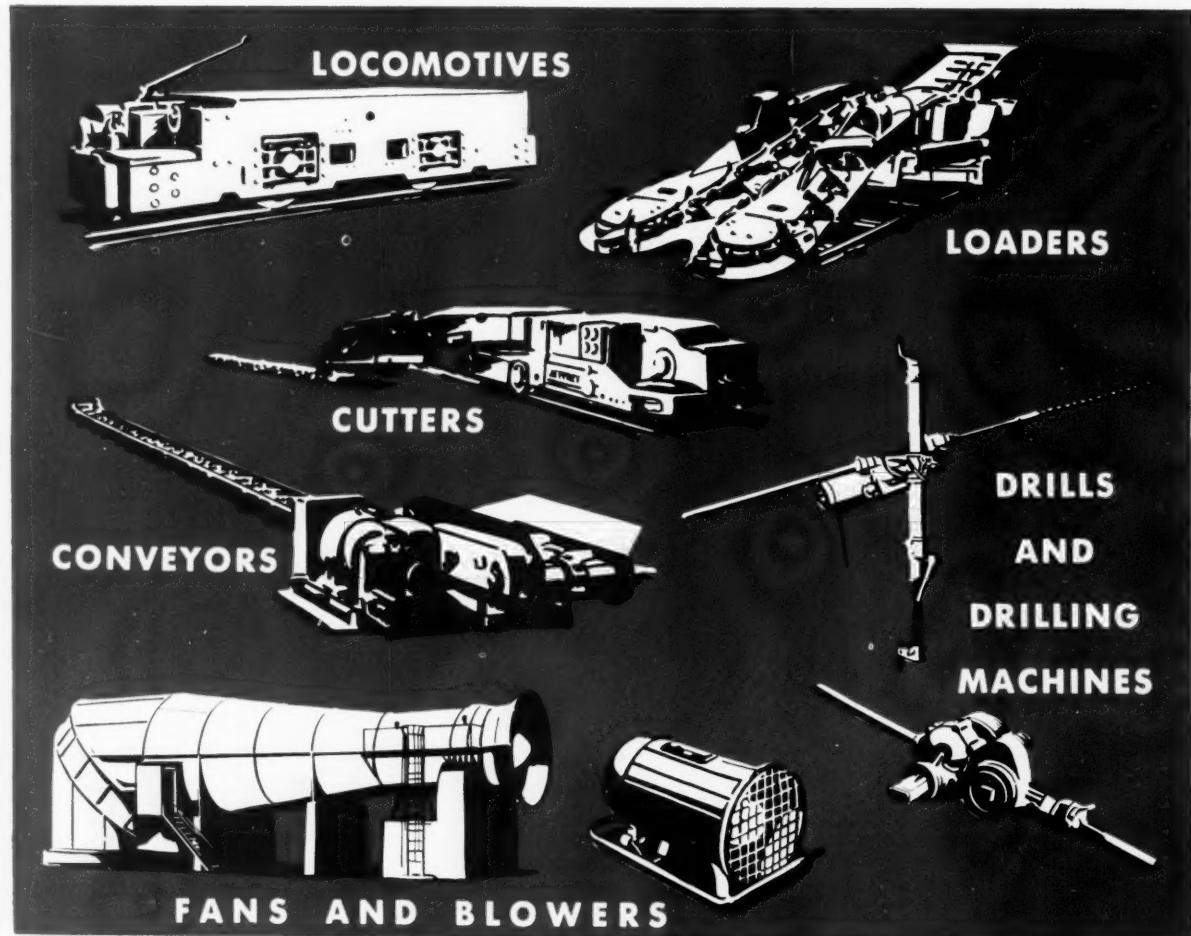
That Jeffrey Loading Machines require ONLY ONE oil for hydraulic system and for lubrication of the bearings and gears in the transmission case. Also only one grade of grease is used for all grease lubricated bearings.



# Jeffrey

## EQUIPMENT FOR COAL MINES

JEFFREY SERVICE TO THE COAL MINES  
MEANS SERVICE TO ALL INDUSTRY



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*Established in 1877*

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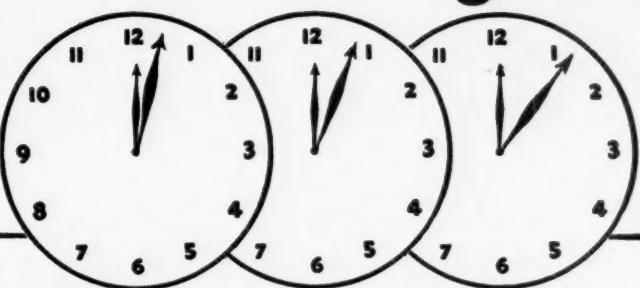
Foreign Plants:

Jeffrey Mfg. Co., Ltd.  
Montreal, Quebec

British Jeffrey-Diamond, Ltd.  
Wakefield, England

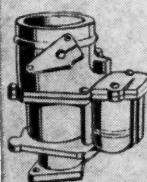
Jeffrey-Galion (Pty), Ltd.  
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# How to Cut Metal Cleaning Time to MINUTES



**NEW, FAST-ACTION DETERGENT CLEANS FERROUS  
AND NON-FERROUS METALS...Easy to Handle**

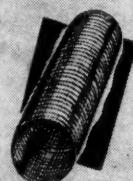
## TYPICAL USES FOR Solvent "26"



**CARBURETORS**  
—Solvent "26" removes gum, gasoline sediment and other accumulations of dirt.



**SPARK PLUGS**  
—Solvent "26" safely cleans porcelain; helps loosen carbon deposits.



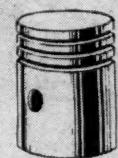
**METAL PLATES AND SCREENS**  
—Solvent "26" restores clear, clean finish to any metal surface.



**DIES AND STAMPING**  
—Solvent "26" removes drawing compounds from die-formed or stamped metal.



**LABORATORY EQUIPMENT**  
—Solvent "26" frees glass and metal tubing and their supports of gums, varnishes and other incrustations or deposits.



**PISTONS**  
—Removes lacquers, gums, resins, etc. from gas, gasoline and diesel engine pistons and rings. Also effective for cleaning all parts of dismantled motors, engines and machinery.

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Used throughout the war in critical industry as a superior cleaning agent, newly-developed SOLVENT "26" is now available for all industrial needs.

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The fast action of Solvent "26" reduces cleaning time from hours to minutes on dismantled engine parts and all kinds of machinery. Simply dip, rub, brush or spray it on. Then flush clean with hot water.

Mail the coupon today for literature and information leading to a demonstration of this unique product in your own plant.

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ARKANSAS FUEL OIL COMPANY



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ACCLAIMED  
THE MACHINE OF TOMORROW  
FOR TODAY'S TOUGH DIGGING JOBS

6 CU. YDS.

*The New*  
**MARION**  
**151-M**

BECAUSE OF THESE PROVEN FEATURES:

Outside Dipper Handle.

Two-piece Dipper.

Single Hitch to Dipper.

Amplidyne—Rototrol Control.

Modern Design.

Sturdy Construction.

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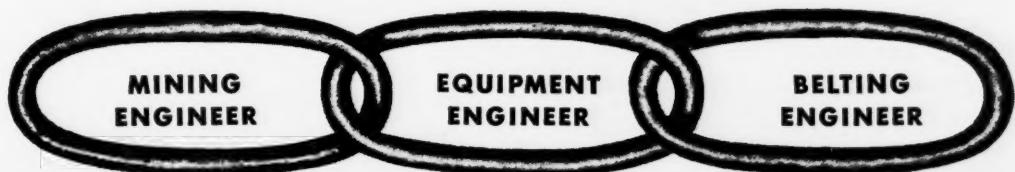
WHAT IS YOUR MATERIAL HANDLING PROBLEM?



**THE MARION STEAM SHOVEL COMPANY**  
MARION, OHIO • Offices and Warehouses in all Principal Cities •  $\frac{3}{4}$  CU. YD. to 40 CU. YDS.



It takes the technical knowledge of  
all three...the Mining Engineer...the  
Equipment Engineer and the Belting  
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**LOW COST CONVEYOR HAULAGE**



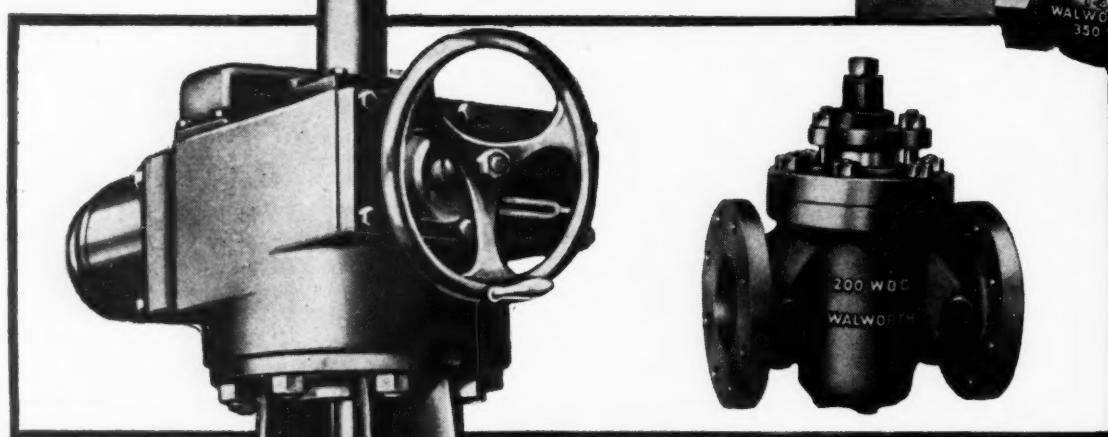
**UNITED STATES RUBBER COMPANY**

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# WALWORTH VALVES

...Scientifically Engineered  
to fit all major services



Cast Steel  
Valves...all  
types, pres-  
sures and  
trimmings



Bronze Valves...  
all types; all pres-  
sures



Lubricated Plug  
Valves...all  
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sures

Since 1842, Walworth has manufactured valves for every piping requirement... scientifically engineered to assure maximum economy and worry-free performance. Each Walworth Valve has all the characteristics required for its special service.

For example, Walworth makes a complete line of cast steel valves. They come in gate, globe, and angle types with weld ends, screw ends, or flange ends. Heavy, rugged walls give enduring strength. Deep stuffing boxes eliminate troublesome leakage. Streamlined ports decrease pressure drop. You don't have to be an "expert" to recognize the fact these Walworth valves have what it takes to lick your toughest jobs.

For acids, alkalis, condensates, organic solvents, slimes, slurries — and vacuum the answer is found in a Walworth lubricated plug valve. It opens or closes with but  $\frac{1}{4}$  turn of the valve handle, and a positive tight shut-off is assured. It's easy to operate and remains completely sealed against leakage in both the open and closed position.

Where Bronze Valves are required, Walworth's are famous for their economy and long, reliable service. In design and construction the complete line reflects the usual sturdiness and efficiency of all Walworth valves, the result of "know how" gained by more than a century of valve manufacturing experience.

For full information on Walworth's complete line of quality valves get in touch with your Walworth distributor, or write for a free copy of Catalog 42.

**Walworth** **VALVES AND**  
**FITTINGS**

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# CARDOX

"THE NON-EXPLOSIVE MINING METHOD"

MAKES YOUR MODERN  
MECHANIZED EQUIPMENT  
*pay bigger dividends*



**CARDOX**  
**HARDSOCG DRILLING**  
**EQUIPMENT**

Complete line of drilling equipment designed to give you the maximum in drilling efficiency.

• CARDOX increases the efficiency of mechanized equipment in many ways. It makes possible the use of longer cutter-bars. It rolls out the coal for faster, easier loading...with less wear on mechanical loaders. Its gentle heaving action produces more coarse sizes...which are more eco-

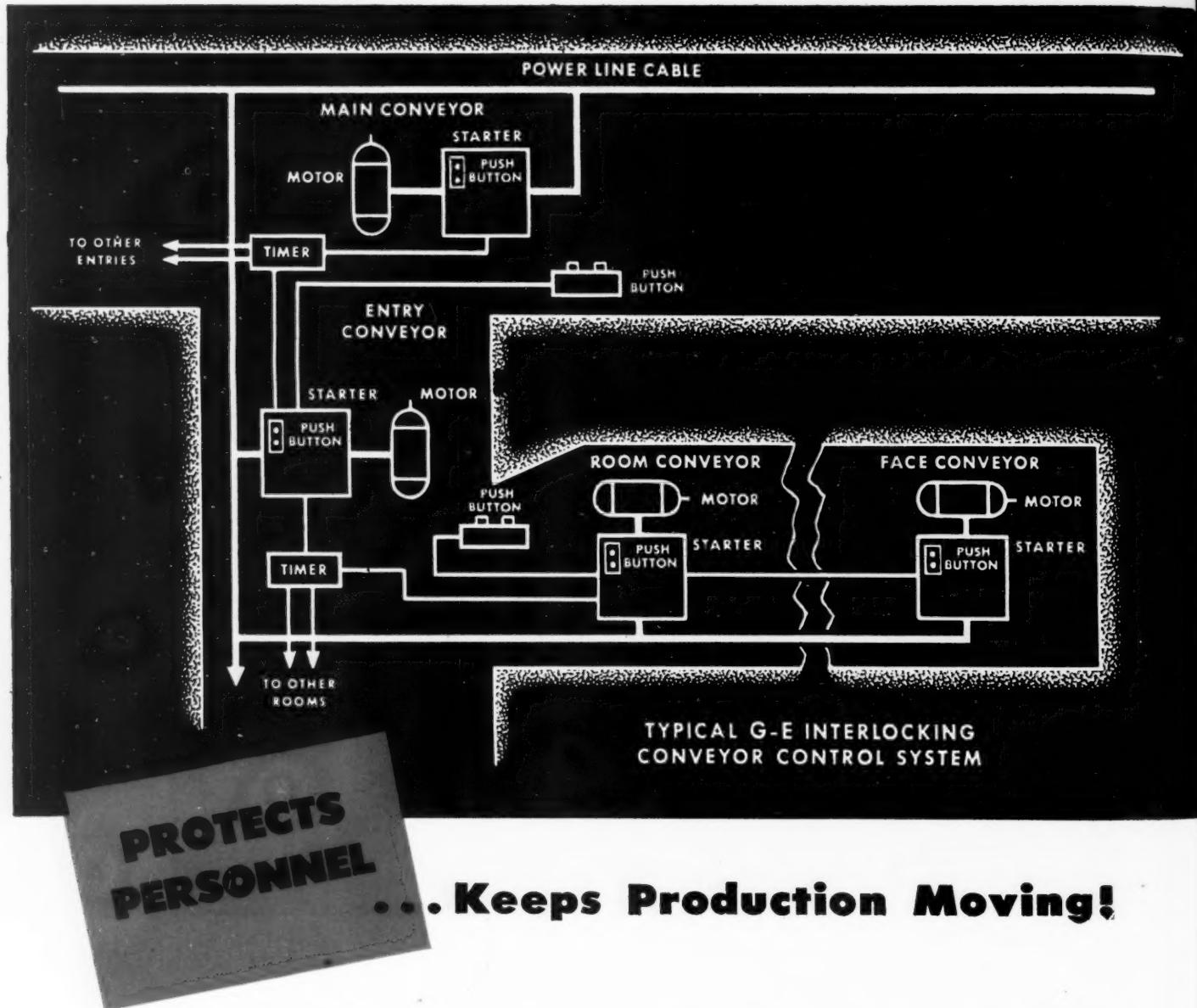
nomical to clean. CARDOX-mined coal will not crumble when subjected to extensive mechanical handling. It is firm and remarkably free from shatter-cracks.

Write for full details on free demonstration of CARDOX under your current working conditions.

**CARDOX CORPORATION • Bell Building • Chicago 1, Ill.**

# MORE SAFETY for

# Conveyor Operation



This schematic diagram shows a typical co-ordinated system of interlocking conveyor controls that will reduce confusion, accident hazards, and lost time. The motors are connected in sequence, so that if any one conveyor breaks down, all contributing conveyors are automatically shut down, thereby preventing coal pile-ups. All motors are started by momentary contact push buttons. Once a conveyor has stopped, unexpected restarts are impossible until that particular conveyor's START

button is pushed. Push-button stations can be either in the controller, at remote-control stations, or a combination of both, whichever is best adapted to efficient operation.

A prime cause of large voltage dips and momentary overloading of the power system has been the tendency of all motors in an interlocking system to start at the same time. In the G-E systems, sequence interlocking or timers so regulate motor-starting that the motors always restart one at a time.

# New G-E interlocking conveyor controls for gassy mines

prevent

COAL  
PILE-UPS  
UNEXPECTED  
RESTARTS

EXCESSIVE  
STARTING  
LOADS

**N**OW you can have safe, positive conveyor control that's co-ordinated "right down the line," from main conveyor to working face. And you can have it in gassy mines where permissible equipment is required.

The diagram opposite shows a typical arrangement of G-E's new control equipment for gassy mines in a conveyor control system that is fully co-ordinated and truly automatic. With a system like this you can eliminate the hazards of dangerous coal pile-ups and unexpected motor restarts.

You can avoid the excessive current peaks which occur when too many conveyor motors start at once.

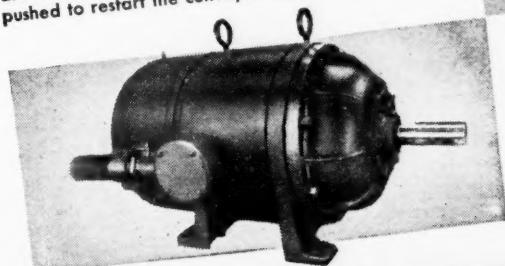
G-E engineers have had wide experience in putting conveying systems on a safe, efficient basis. Rather than supply you with equipment only, their objective is to recommend a complete plan which insures full protection against common conveyor hazards. If you feel that your conveying system needs tighter control, why not talk it over with a G-E sales engineer soon? General Electric Company, Schenectady 5, N. Y.



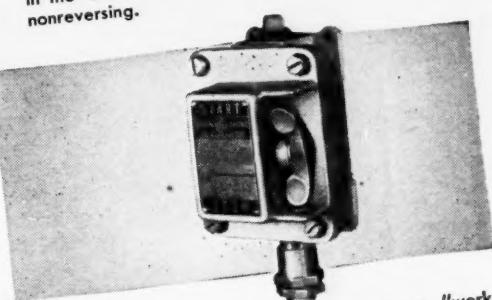
## EQUIPMENT FOR BM-INSPECTED MINES



**Push-button Stations**—The G-E START-STOP, momentary-contact push button, either in the cover of the starter or remotely mounted, is made according to the requirements of BM Schedule 2E and provides undervoltage protection. Unexpected motor restarts which might cause injuries to operators are avoided because the START button must be pushed to restart the conveyor motor.



**Explosion-proof Starters**—Recommended for gassy mines where permissible equipment is required. This starter is built to meet all the requirements of BM Schedule 2E. Available for a-c full-voltage, d-c reduced-voltage, or d-c full-voltage in the enclosure cover, and can be reversing or nonreversing.



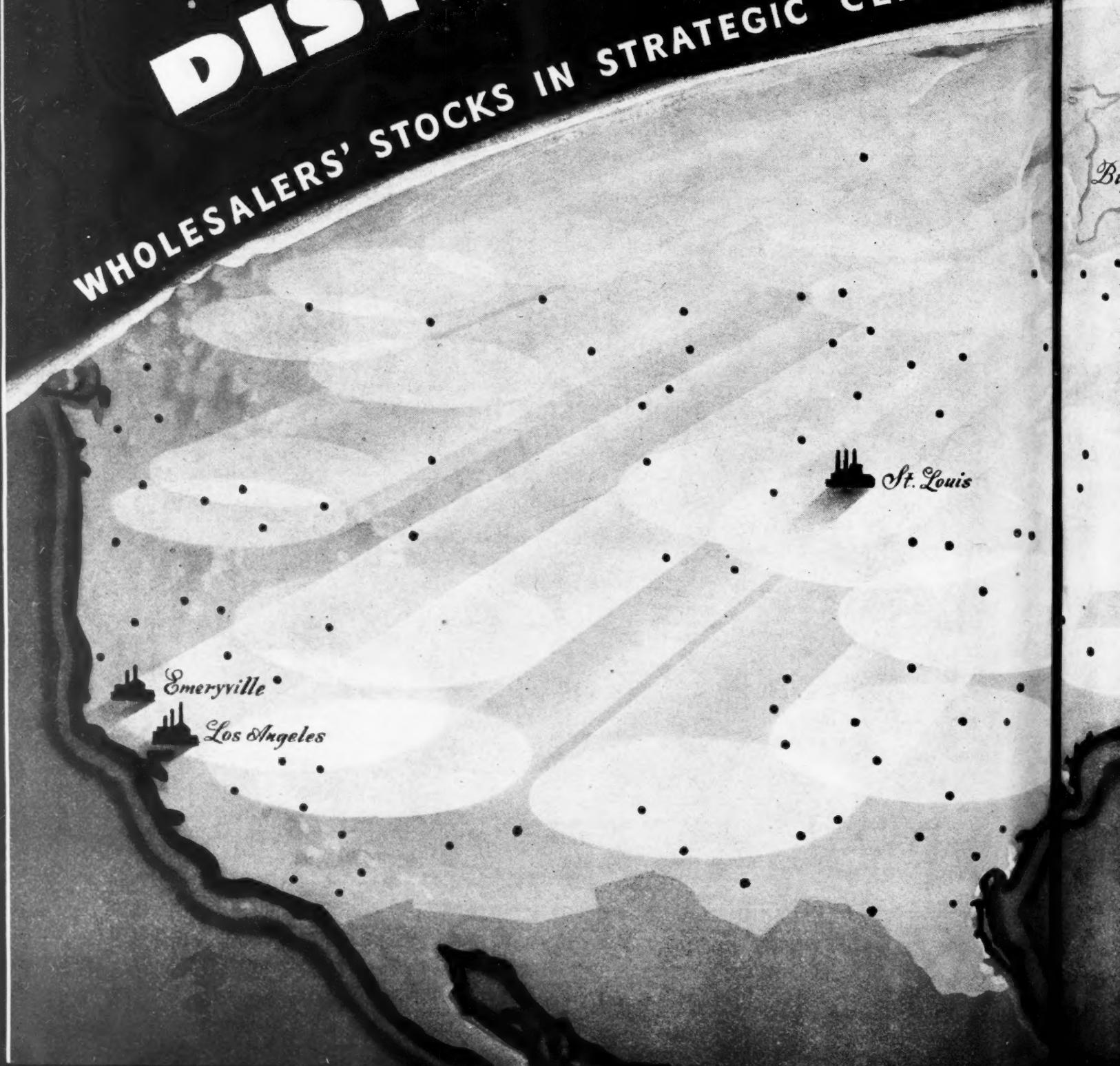
**"BM" Motors**—These sturdy conveyor "work-horses" meet all the design requirements of Bureau of Mines Schedule 2E. Their totally enclosed, fan-cooled construction effectively seals out dirt, dust, and dripping water, assuring long life and little maintenance. Available in all popular sizes and types to meet your mine requirements.

**GENERAL** **ELECTRIC**

651-44-146

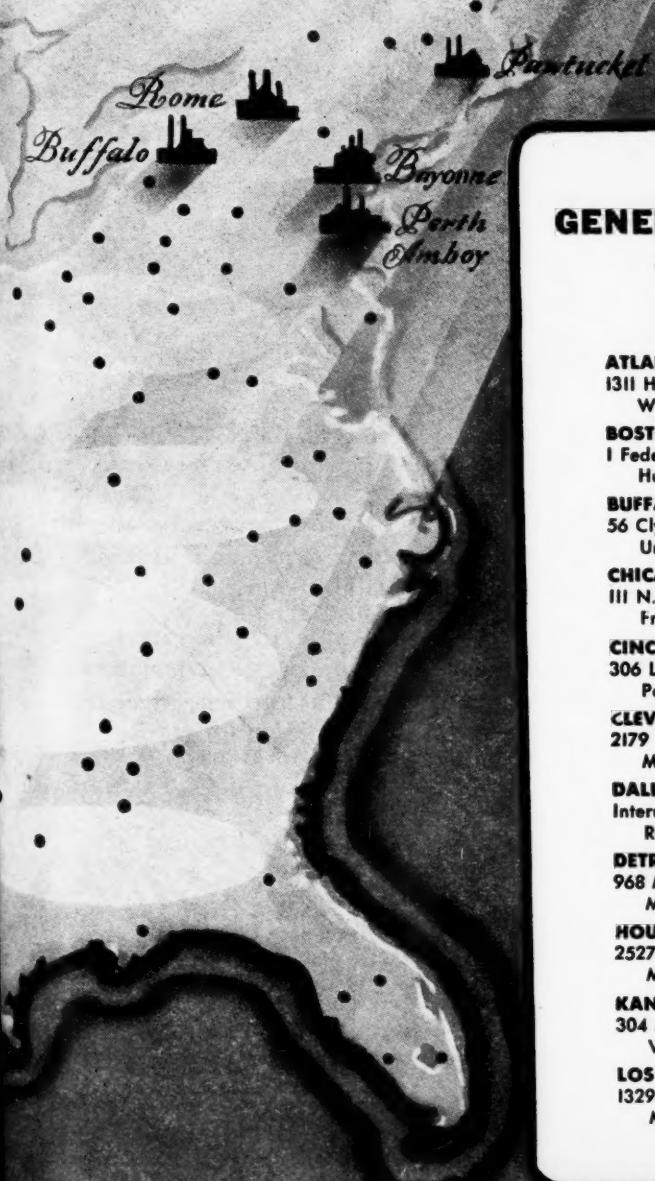
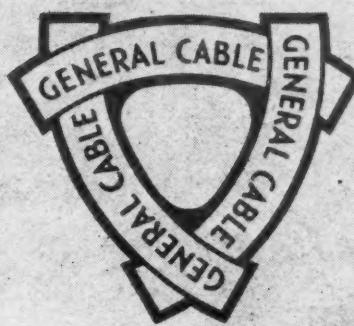
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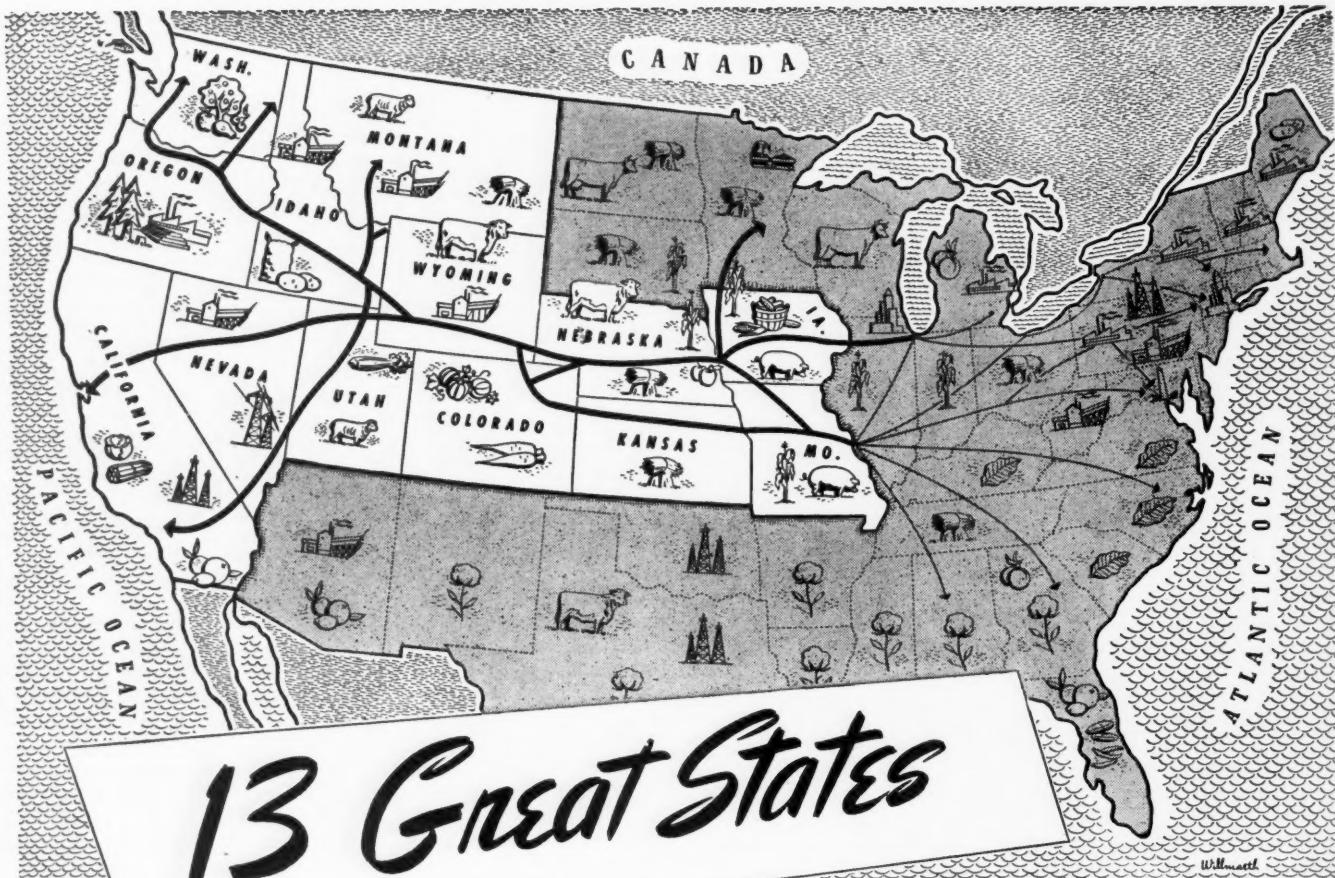
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# GENERAL CABLE

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Above map does not attempt to show all products available in the various states

For more than 75 years, Union Pacific has served thirteen western states . . . been a partner in their development.

This vast fertile territory is more than the breadbasket of the nation. Due to its great wealth of industrial raw materials—ore, minerals, petroleum and lumber—it might also be called the nation's treasure-chest. Rivers have been harnessed—providing irrigation and power. And there is splendid rail transportation.

For example, in Montana, Wyoming and other mineral and ore producing states in Union Pacific territory, there is a large source of supply for the coal and chemical industries. Union Pacific has the equip-

ment and personnel to meet all the requirements of shippers in those regions.

These thirteen western states served by the railroad are ripe for postwar expansion. They have the materials, facilities and space.

Union Pacific will continue to play its part in the future progress of this western territory by providing unexcelled freight and passenger transportation over its Strategic Middle Route.

*Be Specific—  
say "Union Pacific"*

★ Union Pacific will, upon request, furnish information about available industrial and mercantile sites in the territory it serves. Address Union Pacific Railroad, Omaha, Nebraska.





## 112 TONS OF CRUSHED GLASS DAILY? EASY WITH A TOUGH BWH BELT

**PROBLEM:** To haul 112 tons of crushed glass each 14-hour day — 365 days a year, and through drastic temperature changes.

**SOLUTION:** BWH "Bulldog" Belting, of course!

This rugged conveyor belting is made by the famous ROTOCURE process of continuous vulcanization that insures stamina and ease of operation, regardless of how abrasive the load. This BWH belt has run continuously since July 7, 1942, and . . . at a lower maintenance cost.

Through 65 years of leadership in the in-

dustry — BWH has pioneered the development of tough conveyor belts and other rugged products of dependability. Look to BWH for the solution to your tough problem!

**HAVE YOU A JOB WHERE STAMINA COUNTS?**  
Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor, or write to BWH direct.



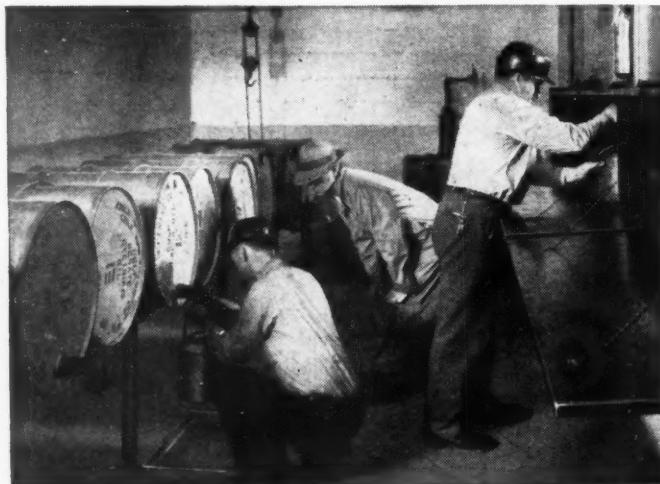
# BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

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## Good Lubrication Practice begins in the Oil House!

*Let a Gulf Service Engineer cooperate with you to set up efficient storage and dispensing*



Exterior and interior views of a well designed oil house which has reduced costs and improved lubrication efficiency for one progressive mine. Oilers go to a specific window for a specific type of oil or grease, and all lubricants are kept in a clean, moisture-free condition.

AMONG THE FIRST REQUIREMENTS for a good mine lubrication practice are the proper storage and dispensing of lubricating oils and greases. Here are a few of the important benefits of an oil house that is well designed and properly located:

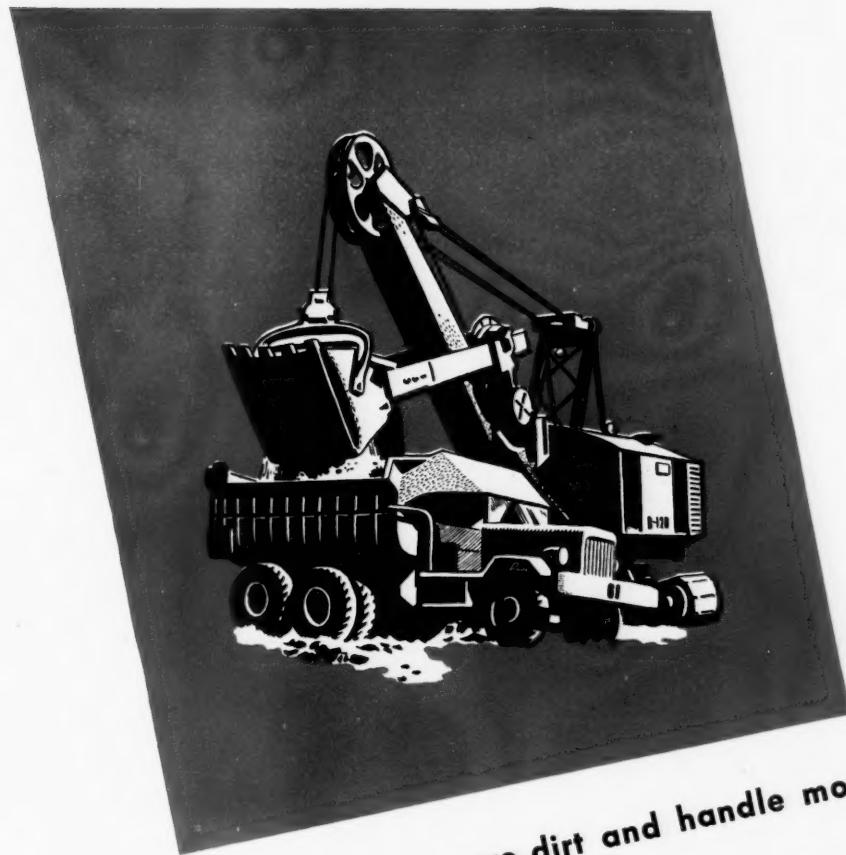
1. Helps to insure that the right lubricant is dispensed for a specific application.
2. Lubricants are kept clean and moisture-free.
3. Guards against the use of improper containers for dispensing lubricants.
4. Insures against waste of lubricants.
5. Impresses on employees the importance of proper lubrication.

Call in a Gulf Service Engineer today and ask him to help you set up efficient storage and dispensing facilities. You can depend upon his suggestions—he has a background of thorough training and broad practical experience with the buildings and dispensing systems employed in many progressive mines. Write, wire, or phone your nearest Gulf office.



Gulf Oil Corporation • Gulf Refining Company

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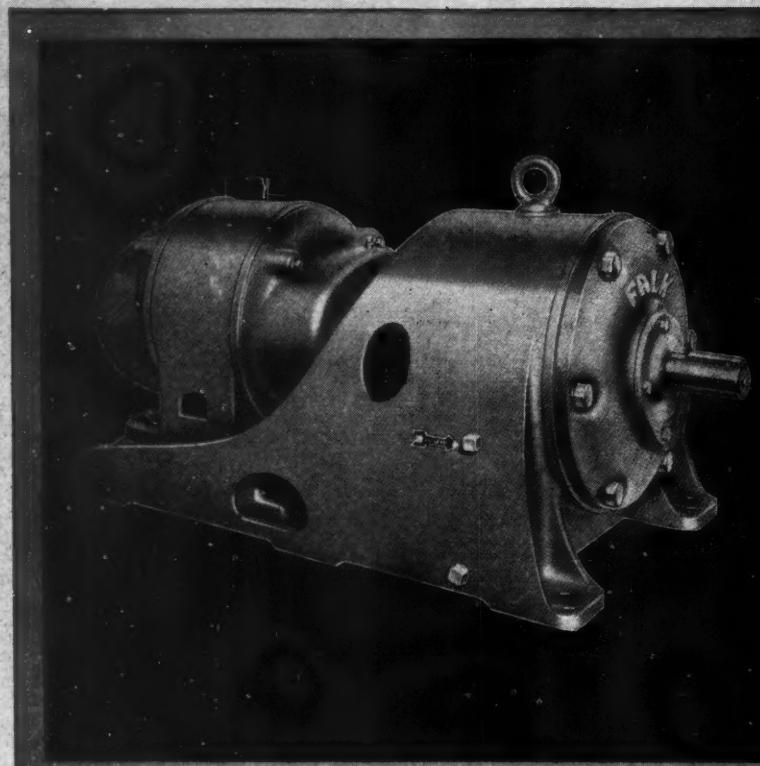
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tonnage...in less time...at lower cost...with  
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**PROOF!** In all types of heavy-duty  
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SINCE 1918...PIONEER OF PROFITABLE POWER  
THROUGH HIGH SPEED DIESELS

**CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA**



Falk is the only manufacturer of the all-motor type of motoreducer. This type permits use of any make of motor in both horizontal and vertical models.



Falk Motoreducers are available in a number of models, of various sizes and ratings, with single, double, and triple reduction gear sets. Illustrations show, above, double reduction all-motor type DU, and, at right, double reduction vertical all-motor type DZX. Both are available in 1 to 75 horsepower range.

**ANY SIZE:** for continuous or intermittent service, and for steady variable, or shock loads. Falk Steelflex Couplings are included to provide torsional resilience between motor and gears. Available for floor, wall, or ceiling mounting, with a variety of arrangements providing 16 possible assemblies.

**ANY SERVICE:** Falk Motoreducers are widely used for mixer drives, agitator drives, conveyor drives, pump drives, dust collector drives, screen drives, classifier drives, shot blast drives, vat drives, fan drives and washer drives.

**ANY HORSEPOWER:** made to accommodate any standard motor from 1 to 30 H.P. on single reduction horizontal or vertical units; from 1 to 75 H.P. on double reduction units; and 1 to 40 H.P. on triple reduction units.

**ANY SPEED:** gear sets are available for almost any speed from 1430 to 280 rpm on single reduction units; 230 to 45 rpm on double reduction units; and from 37 to 7.5 rpm on triple reduction units, either horizontal or vertical type.

**ANY TYPE:** any type Falk Motoreducer is available in any speed and horsepower rating range; that is, the single reduction Motoreducer in any particular rating is available in both horizontal and vertical all-motor types. See other horizontal and vertical types illustrated at right.

**ANY MOTOR:** any standard horizontal ball bearing motor with feet may be used on the horizontal all-motor reducers; any standard vertical type motor on the vertical units.

IT ALWAYS PAYS TO CONSULT

**FALK**

# Motor-changeability!

## A feature of Falk Motoreducers which makes them adaptable to any requirement

Falk All-Motor units are the answer to the man who prefers to use a motor of his own selection with the gear drive. For Falk All-Motor units make it possible to interchange motors or units, in the plant, on the job, in a few minutes time.

With Falk All-Motor units, illustrated on the left-hand page, you can use any make, speed, or type of motor required, within the rating of the unit. You can interchange motors from one line to another, or from one part of the plant to another. Few spare motors are necessary.

Falk Motoreducers are compact, self-contained unit drives available in either horizontal or vertical models, in horsepower ranges of from 1 to 75 H.P., and with single, double, or triple reduction gears giving an output range of from 1430 down to 7.5 rpm.

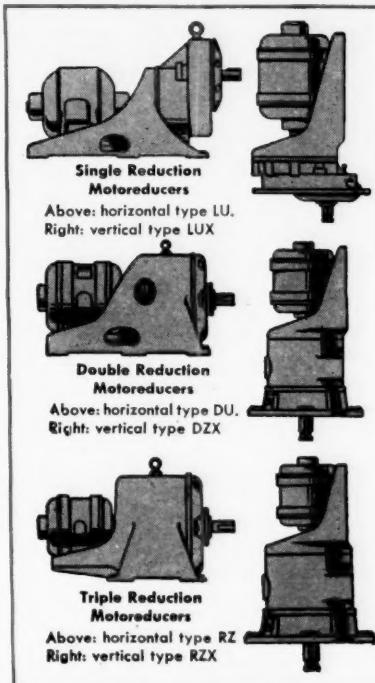
Parts as well as motors are fully interchangeable, and you can keep spare parts stocks with the knowledge that they will fit closely without plant machining. That is because of the close tolerances which Falk precision workmanship holds on these parts. Shafts are machined to a tolerance plus of .0000", minus .0005"; tolerance on gearing to within .0001" per inch of face on lead.

Profile accuracy of tooth is within .0002".

Gear ratios are quickly and easily changed at little cost. There are no parts requiring adjustment. Absolute freedom from oil leakage is characteristic. Operation is quiet, with reducer efficiencies 98% on single reduction units, 97% on double and triple reduction. A Falk Steelflex Coupling takes care of any possible misalignment and provides torsional resilience between motor and gears.

Gears are made of high grade Falk gear steel, or, on the larger units, Falk Telastic Molybdenum steel. All gears are heat treated to 285-330 Brinnell, then cut and shaved. Bearings are ball or straight or taper roller, with oversize bearings on low speed shafts to permit heavy overhung loads and thrust loads. Lubrication is through an automatic continuous system of Falk design, multi-sealed to be completely leak-proof. A special pressure system is built into Falk vertical Motoreducers.

Write Falk for Bulletin 3100, which gives details and specifications, and complete selection tables for all Falk Motoreducers for any service. It also contains load classification tables for common applications.



THE FALK CORPORATION, MILWAUKEE 8 WISCONSIN

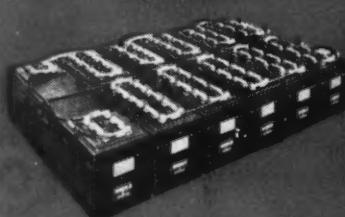
For over fifty years precision manufacturers of Speed Reducers . . . Motoreducers . . . Flexible Couplings . . . Her-ringbone and Single Helical Gears . . . Heavy Gear Drives . . . Marine Turbine and Diesel Gear Drives and Clutches . . . Steel Castings . . . Contract Welding and Machine Work.—District Offices, Representatives in principal cities.

# FALK

... A GOOD NAME IN INDUSTRY



**GLASS MAT**  
The extra protection of  
*layered spun-glass*  
is an original Gould  
development.



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**IS YOUR TONNAGE  
REDUCED BY**

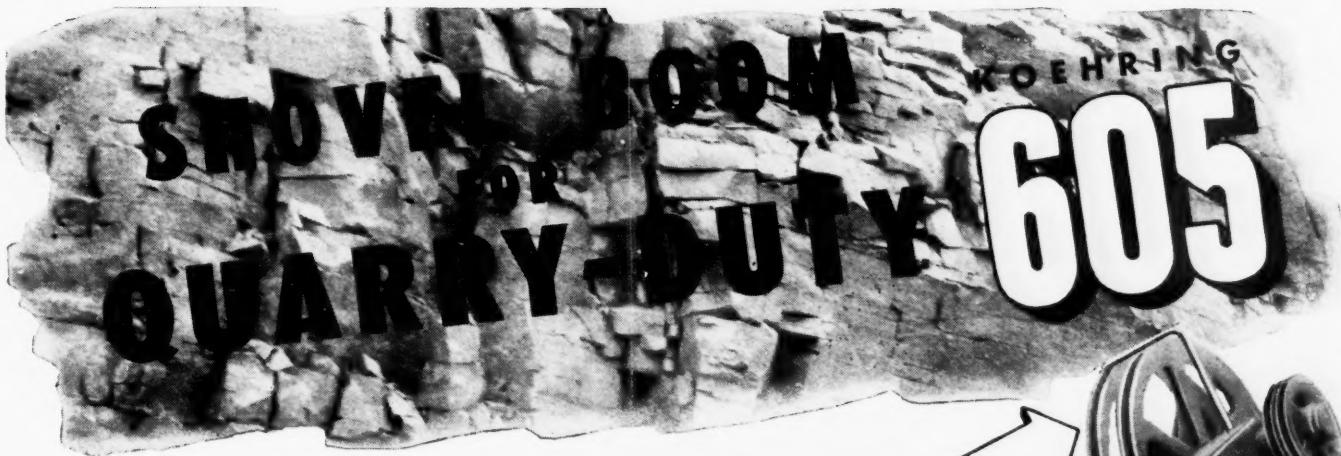
# *Failing* **BATTERY POWER?**

Gould Kathanode power speeds your mine locomotive throughout each working shift. There are no slow-downs or reduced loads because of failing battery current on the closing runs.

In the Gould Kathanode battery *layered spun-glass* mats are placed on both sides of each positive plate. After a few months of service these are actually a part of the plate itself, holding *all* useful active material in place. Thus the ability of Kathanode to deliver useful current is maintained day after day throughout its entire service life.

You can depend on Gould power in mine locomotive operation. Write Dept. 112 for Catalog 200 on Gould Kathanode Glassklad Batteries for Mine Locomotive Service.



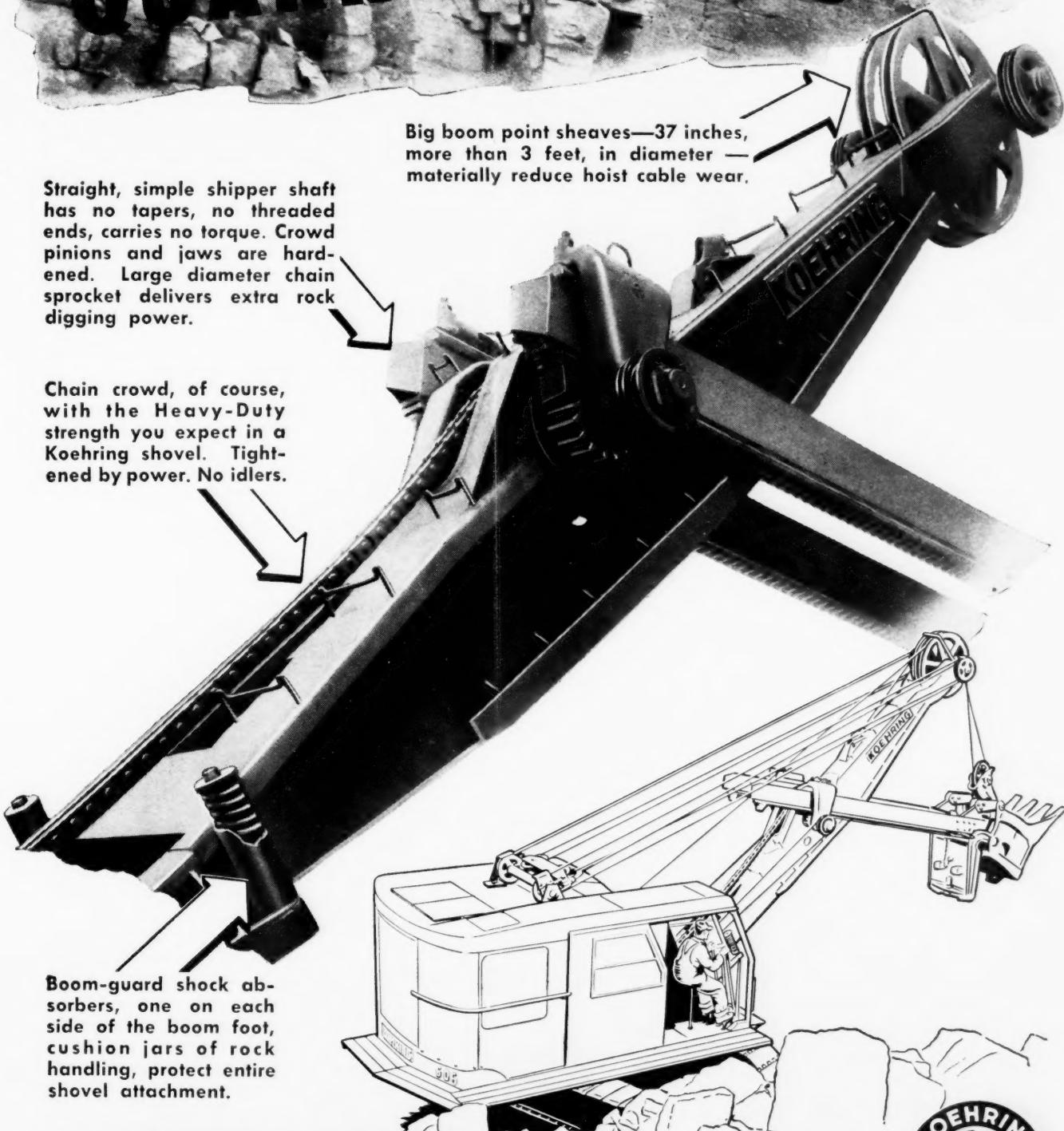


Straight, simple shipper shaft has no tapers, no threaded ends, carries no torque. Crowd pinions and jaws are hardened. Large diameter chain sprocket delivers extra rock digging power.

Big boom point sheaves—37 inches, more than 3 feet, in diameter—materially reduce hoist cable wear.

Chain crowd, of course, with the Heavy-Duty strength you expect in a Koehring shovel. Tightened by power. No idlers.

Boom-guard shock absorbers, one on each side of the boom foot, cushion jars of rock handling, protect entire shovel attachment.



**KOEHRING COMPANY**, Milwaukee 10, Wis.

**HEAVY-DUTY CONSTRUCTION EQUIPMENT**



# "Looks Good... without Rose-Colored Glasses"



*It doesn't take rose-colored glasses* to make a coal preparation plant look good. Profit statements and cost records have revealed to management that it pays big to produce premium fuel.

**To coal mine directors** a new coal preparation plant means better service to customers . . . more new customers knocking at the door for prepared fuel . . . a stimulating influence on the sales department . . . a growing "in-the-black" operation.

**To coal mine production men** it means an automatic plant capable of producing more tons of specification fuel in a wide variety of sizes with less men and with maintenance at a new low.

**Small wonder then** that technical experts, who have engineered such plants, are welcomed in a discussion to which they can bring so much convincing evidence that production pays.

(Reproduction of advertisement substantially as it appears in Fortune Magazine)

**M'C NALLY PITTSBURG**

MANUFACTURERS OF EQUIPMENT TO MAKE COAL A BETTER FUEL

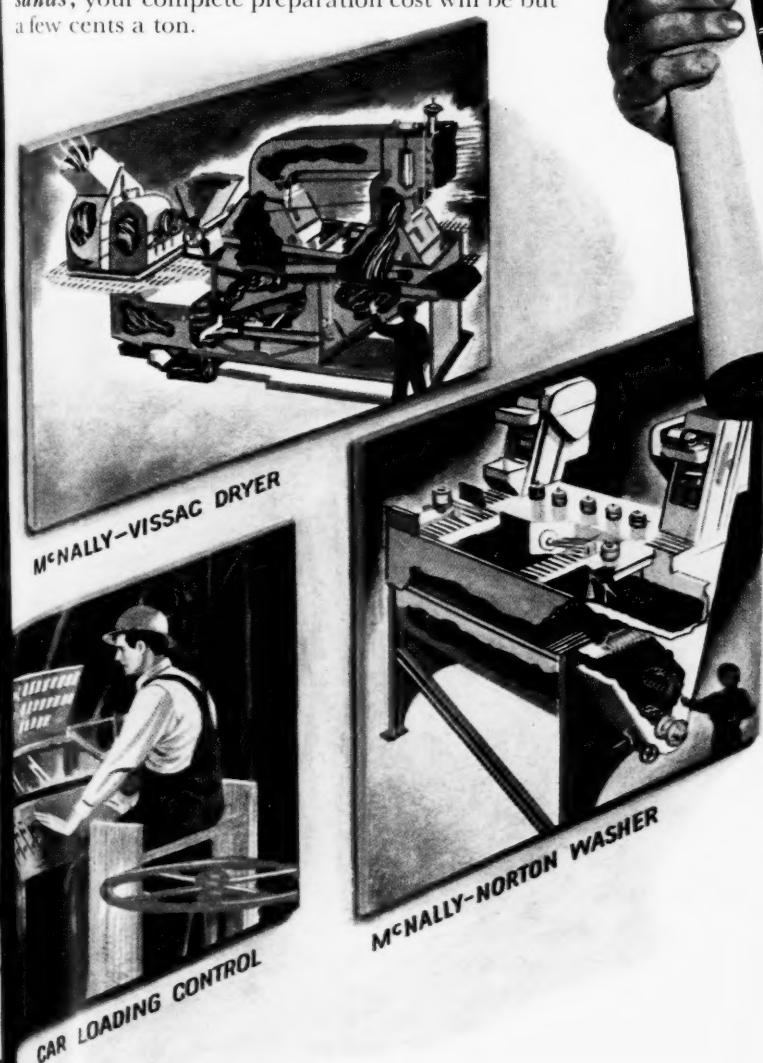
# Production Men See More TPH of Specification Coal

**Automatic control of product in a preparation plant** looks good to production men from every angle. Such a plant means that they will be able to greatly boost the tonnage output of specification coal to meet the demands of consumers and to the satisfaction of their own sales department.

**There is a maximum of coal recovery** wherever McNally Pittsburg coal preparation plants are installed. McNally-Norton washers, such as illustrated here, automatically separate coal from refuse with great accuracy, control definite ash content hour after hour, day after day, month after month, regardless of variations of refuse percentage in the raw coal feed.

**In addition, the plant reduces labor** many times over manual picking. Only a small operating crew is needed to turn out record runs.

**Whether you produce 50 tph or up in the thousands**, your complete preparation cost will be but a few cents a ton.



**MCNALLY • PITTSBURG**

BETTER FUELS MANUFACTURERS OF EQUIPMENT TO MAKE COAL A BETTER FUEL

# To get longer life from bearings

## (1) Use the right grease

The difficulties of choosing the right type of grease for any particular application are demonstrated in the table above. This lists the general operating characteristics of the more common types of grease. In addition, each type comes in many grades and all have advantages for specific grease lubricating jobs.

Many plant men have given up trying to guess their way through this maze. They know that Standard Oil makes all types of grease. They've found that Standard Oil Lubrication Engineers are qualified by training and experience to analyze operating conditions and fit the right type and grade of grease to the job. But the right grease is only half the problem. The other is:

Class	Type	Kind of Soap	Upper Temp. Limit	Characteristics
Lime Soap (Calcium)	Cup	Lime fat	175° F.*	Smooth, water resistant, separates on boiling out water content, limited consistency loss on working.
	Axle	Lime rosin	150° F.	Smooth, sticky, water resistant, separates on boiling out water content, great consistency loss on working.
	Fibre and Sponge	Soda fat	375° F.	Fibrous, not water resistant, does not separate at elevated temperatures, variable consistency loss on working.
	Medium and Short Fibre	Soda fat	375° F.	Semi-smooth, not water resistant, does not separate at elevated temperatures, variable consistency loss on working.
Smooth (block, brick)		Soda fat (variable soda rosin content)	400° F.	Smooth, hard, not water resistant, does not separate at elevated temperatures.
Aluminum Soap	— — —	Aluminum fat	240° F. (average)	Smooth, gel-like or stringy, water resistant, becomes fluid at elevated temperatures, limited consistency loss on working.
Compounds	Residuum	Usually none	— —	Smooth, black, adhesive, excellent pressure and water resistant.

\*As high as 200° F. for special lime soap greases where such maximum temperature is intermittent.

## (2) Good Maintenance Practices

The proper functioning of even the best grease in a bearing depends upon many factors such as condition of seals, bearing alignment and lubricant application, to name a few. A common tendency, for example, is to apply too much grease to anti-friction bearings. This results in excessive churning of the grease, undue friction and leakage.

Here again a Standard Oil Lubrication Engineer can help you by determining the cause of bearing or lubricating failures. Put your lubricating problems into the hands of one of these Lubrication Engineers. Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Ill., for the Engineer nearest you.

**STANDARD OIL COMPANY (INDIANA)**

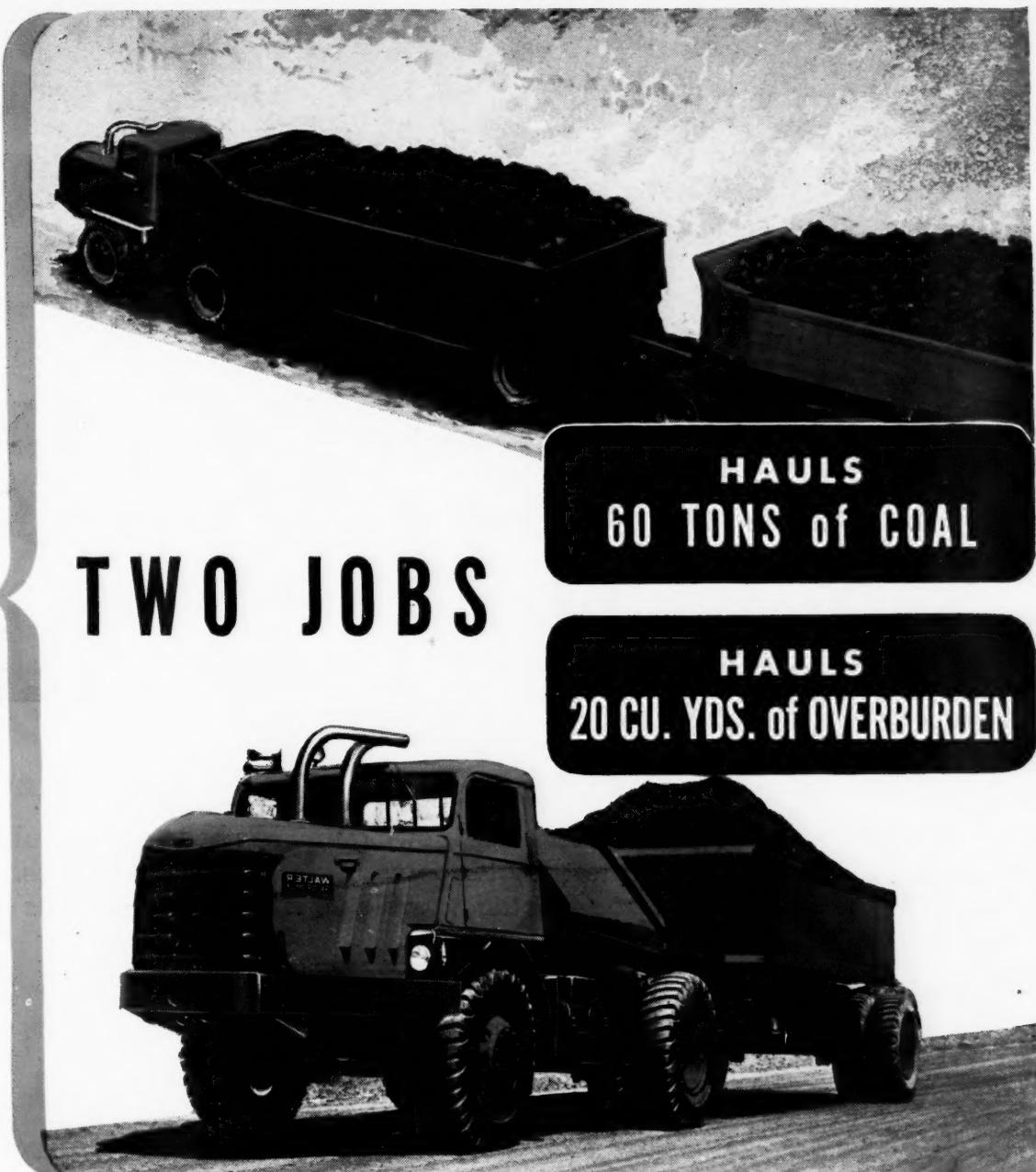
**STANDARD SERVICE**

ONE  
TRUCK

TWO JOBS

HAULS  
60 TONS of COAL

HAULS  
20 CU. YDS. of OVERBURDEN



The Walter Tractor Truck pays for itself quickly because it puts in more work than other trucks. It permits strip mines to obtain full economy of trailer operation in BOTH coal and overburden hauling, because it combines truck speed, with tractor traction. Coupled to bottom-dump coal trailers, Walter Tractor Trucks haul 60-ton payloads from pit to plant, at speeds equalling smaller trucks. Attached to the 20 cu. yd. side-dump trailers which handle large rocks, they take full loads of overburden through broken ground, loose dirt, mud and up steep grades. This combination of power, speed and 100% traction, results from the Walter Four Point

Positive Drive. Power of the 300 h. p. engine is proportioned to the FOUR driving wheels according to their traction at any instant. By eliminating wheel spinning, it prevents tire grinding and road gouging. All vital parts of this drive are out of reach of stumps, rocks and high crowns. Other features include tractor type transmission, short wheelbase, hydraulic steering and air brakes. Write for complete specifications.

WALTER MOTOR TRUCK CO.  
1001-19 IRVING AVENUE, RIDGEWOOD 27, QUEENS, L. I., N. Y.

**WALTER**  
**TRACTOR TRUCKS**

# ANNOUNCEMENT

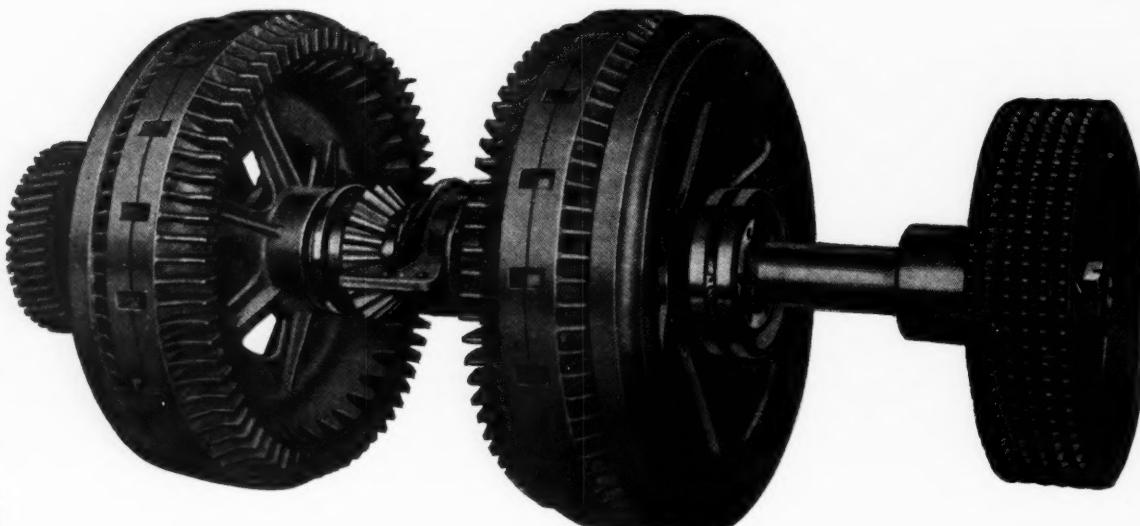
## *The New* P&H **MAGNETORQUE SWING UNIT**

### **Puts an end to swing friction troubles—Another history-making P&H development**

For the first time in excavator history, an electric swing unit has been successfully applied to large friction shovels, eliminating the greatest single source of wear and maintenance. The Magnetorque principle is adapted from P&H's large Electric Shovels where it has proved its greater values for over four years.

Here are some of its outstanding advantages:

1. It eliminates all friction on swing and propel motions—their adjustment and maintenance.
2. Smoother swinging because power is transmitted entirely by electro-magnetic force.
3. Higher swing speeds, through more accurate and dependable starting and stopping, eliminate waste operating time.
4. Eliminating frictions eliminates layup time—Magnetorque unit will last the life of the machine.
5. Maintenance costs are cut to the bone.
6. More dependable performance greatly increases daily output.



Here are the P&H Magnetorque Swing Units as applied on the new P&H Model 1055. In replacing the usual swing frictions, the greatest single source of wear is eliminated. Power

is transmitted by electro-magnetic forces—there is no mechanical contact between driving and driven members.

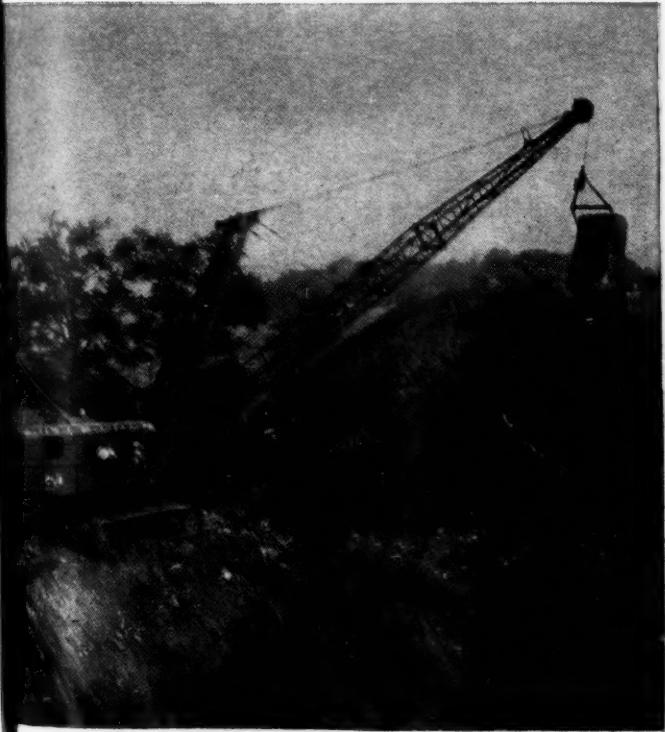
P&H  
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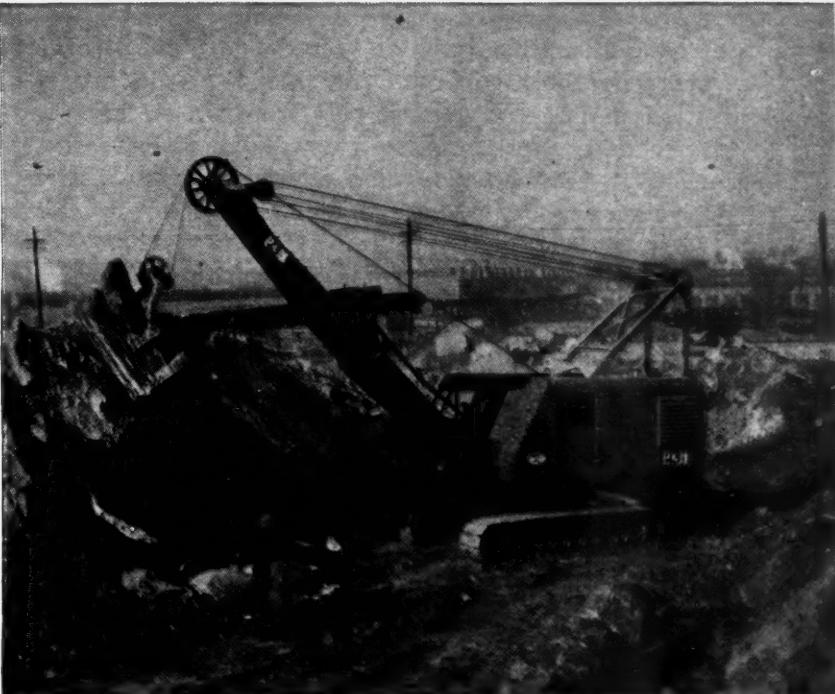
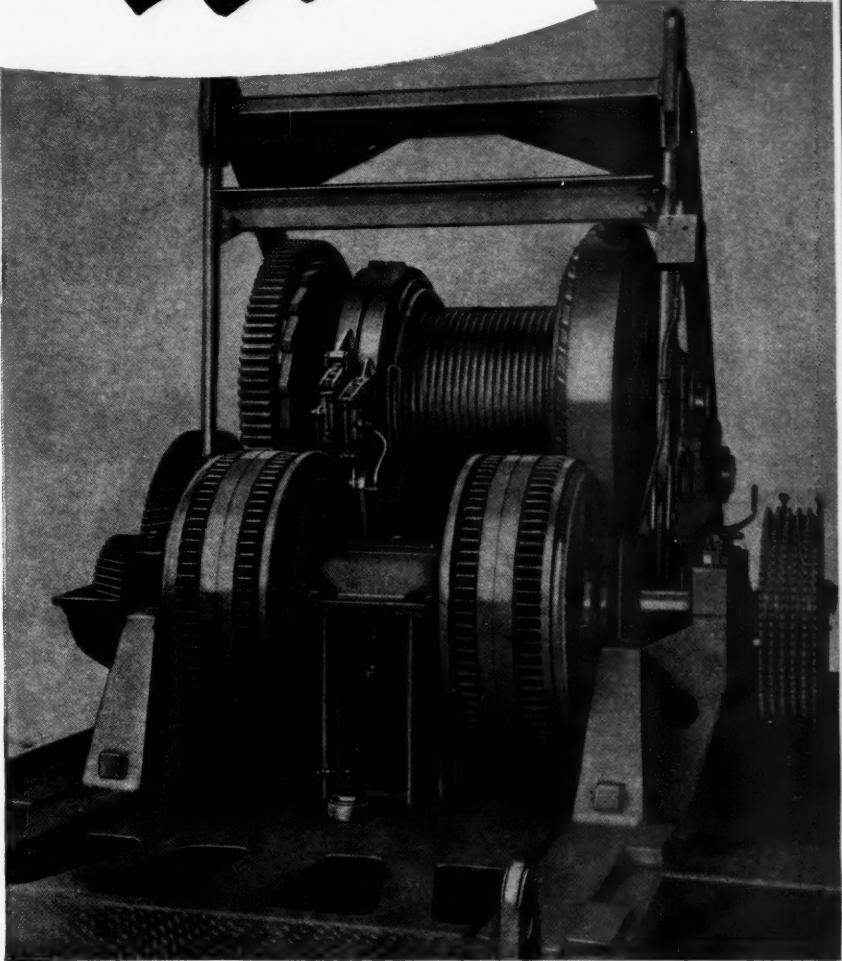
# SWING...

ANOTHER  
P&H ADDED VALUE!

Rear view of upper deck of P&H Model 1055 with cab removed, showing the 3-bearing jackshaft which embodies the Magnetorque swing units and which is equipped throughout with self-lubricated, anti-friction bearings. Excitation for the Magnetorque swing units, controlled from the operator's station, is supplied by a small generator on the main engine.



P&H Model 1055LC long range dragline equipped with 80 foot boom and 4 yard bucket —on a 100 foot boom it handles a 3 yard bucket.



P&H Model 1055 Heavy Duty Shovel, with 3 cubic yard dipper. All 1055 Models are equipped with such added features as hydraulic control, planetary crowd, planetary boom hoist, etc.

## EXCAVATORS

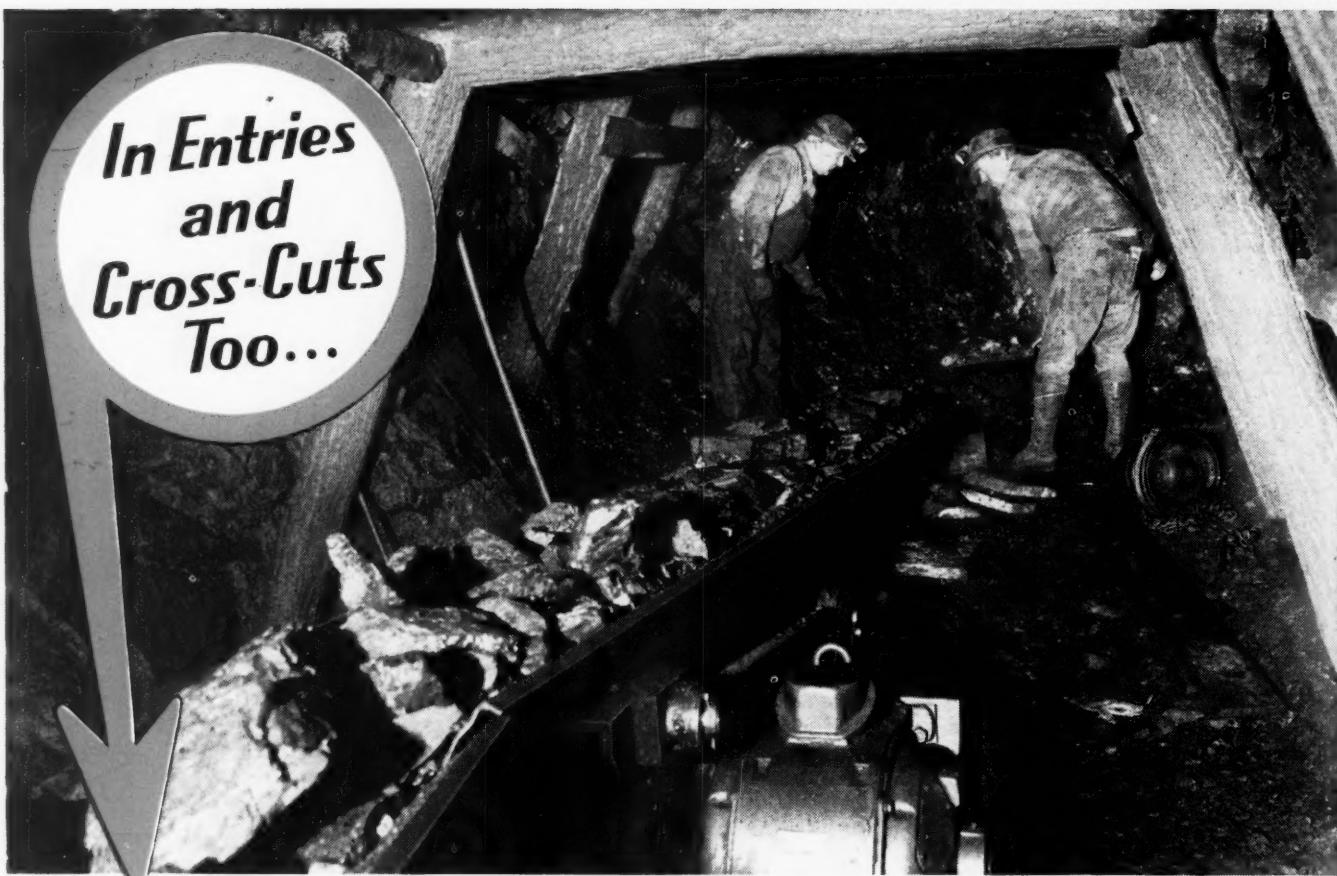
4540 West National Ave.  
Milwaukee 14, Wisconsin

**HARNISCHFEGER**  
CORPORATION

EXCAVATORS • ELECTRIC CHAINES • ARG WELDERS • JEH  
HOISTS • WELDING ELECTRODES • MOTORS

Write us for complete information concerning  
the P&H Magnetorque Swing Unit.

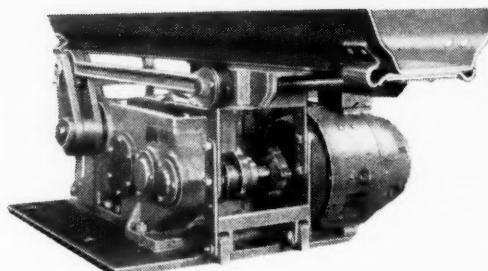
*In Entries  
and  
Cross-Cuts  
Too...*



## Vulcan Shaking-Chute Conveyors Cut Labor Costs and Boost Production

Modern applications of Vulcan Shaking-Chute Conveyors not only eliminate the back-breaking drudgery of loading coal into mine cars from rooms and long-wall working faces, but also in entries, cross-cuts and headings. Many ingenious and effective methods have been developed by Vulcan Engineers—some of which are only possible with Vulcan equipment.

Write us regarding any coal or rock handling requirements. We manufacture not only shaking-chute conveyors, but also a complete line of underground chain conveyors and scraper loaders, so that our engineers can afford to be absolutely impartial in their recommendations. No charge, or obligation of any kind, for constructive suggestions and estimates.



Vulcan Shaking-Chute Conveyor Drives are manufactured in several types and sizes for operation by motors ranging from 5 to 35 hp. We also manufacture a complete line of chutes, rollers, screw-jacks and other accessory equipment. Bulletins on request.

## VULCAN IRON WORKS

Established 1849

Main Office and Works WILKES-BARRE, PA., New York Office 50 Church St.

Heavy-Duty Electric Hoists  
Self-Contained Hoists  
Scraper Hoists  
Car-Spotting Hoists  
Room Hoists

Shaking-Chute Conveyors  
Chain Conveyors  
Cast-Steel Sheaves and Gears  
Cages, Skips and Gunboats  
Coal-Preparation Equipment

Steam Locomotives  
Diesel Locomotives  
geared and electric drive  
Gasoline Locomotives  
geared and electric drive

Load-Carrying Larries  
Rotary Kilns, Coolers and Dryers  
Crushers and Pulverizers  
Briquetting Machines  
Ball, Rod and Tube Mills

# HOODOO SMASHERS!

America's newest and widest line of V-Belts—Allis-Chalmers' Texrope — solves problems that have hoodooed drives in almost every industry . . . see what they can do for you!



Texrope V-belts are available nation-wide through Allis-Chalmers Dealers and Sales Offices

IT PAYS TO MAKE  
**ALLIS-CHALMERS**  
YOUR V-BELT DRIVE HEADQUARTERS

Texrope Super-7 V-Belts result from the cooperative research of two great companies — Allis-Chalmers and B. F. Goodrich — and are sold exclusively by A-C.

## BULLETIN!

### SPEED RECONVERSION WITH HELP OF NEW FREE A-C KIT!

#### Guide to "How to Take Reconversion Inventory" of Drives, Motors, Pumps

Help in the big job of reconverting for peacetime production is now offered to plants everywhere by Allis-Chalmers Mfg. Co., its district offices and distributors. To all who request it, we're sending the new "Reconversion Inventory Kit", planned to speed the task of determining the condition of your existing equipment — V-belt drives, motors, and centrifugal pumps — which will be used in reconverted production.

#### SUGGESTS PROCEDURE, STATES STANDARDS

Used by foremen, maintenance men, and engineers, the Kit is a real time-saver . . . leads efficiently to probable trouble spots, helps clear them up. Gives bearing tolerances, resistance formulae, etc., in compact, easily-used form. Check List appraisal charts help determine present and future condition of units inventoried.

#### HOW TO GET YOUR KIT

For your free Reconversion Inventory Kit, call your nearest Allis-Chalmers distributor or district office, or write Dept. 26, ALLIS-CHALMERS MFG. CO., Milwaukee 1, Wis.

ALLIS-CHALMERS MFG. CO.  
Dept. 26, Milwaukee 1, Wis.

Please send Reconversion Inventory Kit free of charge to:

Company.....

Address.....

Attn. of Mr. ....

# “Up” Production... Keep Costs Down with ATLAS PERMISSIBLES



No two mines are exactly alike, and seams in the same mine often differ. That's why Atlas makes 25 different kinds of Permissibles, each with a different kind of problem in mind.

If you have the right kind of Permissible to begin with, and if you use it correctly, you get coal out more efficiently—step up production and keep costs down. Look over the chart below. Then consult with the Atlas Representative on how their characteristics may be applied to your best advantage.

*Let the Atlas Representative Tell You the Complete Story*

## ATLAS PERMISSIBLE EXPLOSIVES

Name Redipped Cartridges	Atlas Velocity Ft. Per Sec. 1 1/4 x 8" Ctg.	Velocity* Ft. Per Sec. Bureau of Mines	Weight Strength	MINIMUM NUMBER 8" CARTRIDGES PER 50-LB. CASE					
				1 1/8"	1 1/4"	1 1/2"	1 1/2"	1 3/4"	2"
Coalite C.....	10,000	12,100	60%	160	133	109	96	72	53
Coalite B.....	9,700	11,500	60%	196	160	132	111	82	61
Coalite M.....	8,000	9,500	60%	220	180	148	123	92	70
Coalite G.....	7,750	7,900	60%	175	145	119	102	76	57
Coalite S.....	7,500	7,900	60%	196	160	132	111	82	61
Coalite L.....	7,500	8,900	60%	242	200	164	137	100	76
Coalite K.....	7,250	9,500	60%	264	220	181	150	112	85
Coalite J.....	6,000	8,400	60%	153	128	—	91	67	—
Coalite E.....	6,000	6,200	55%	160	133	109	96	72	53
Coalite T.....	6,000	5,900	60%	196	160	132	111	82	61
Coalite O.....	6,000	7,500	55%	293	244	201	166	113	93
Coalite MS.....	5,400	6,200	60%	226	185	152	126	95	75
Coalite LS.....	5,000	6,200	60%	—	210	172	144	106	81
Sprayed Cartridges									
Coalite M-1.....	8,000	9,500	60%	—	180	—	123	92	70
Coalite G-1.....	6,000	7,400	60%	175	145	119	102	76	57
Coalite L-1.....	7,500	8,900	60%	242	200	164	137	100	76
Coalite K-1.....	7,250	9,400	60%	264	220	181	150	112	85
Coalite MS-1.....	5,400	6,600	60%	226	185	152	126	95	72
Coalite S-1.....	7,500	7,900	60%	—	160	—	111	82	61
Coalite T-1.....	5,500	5,900	60%	—	170	139	117	87	66
Coalite LS-1.....	5,000	6,600	60%	—	210	172	144	106	81
Gelatinous Permissibles									
Gelcoalite Z.....	16,400	16,700	55%	130	107	88	73	55	41
Gelcoalite W.....	12,000	12,500	55%	146	120	100	82	60	46
Gelcoalite No. 3.....	7,000	11,500	55%	155	126	106	87	64	49
Gelcoalite X.....	8,200	9,500	35%	120	97	80	65	50	38

\*The difference is due to different methods of testing for velocity. Atlas Powder Company tests the explosive wrapped in three thicknesses of case-lining paper, which provides little confinement. At the U. S. Bureau of Mines Laboratory the cartridge is tested in a light metal cylinder, which furnishes some confinement, usually increasing the velocity.

# ATLAS EXPLOSIVES

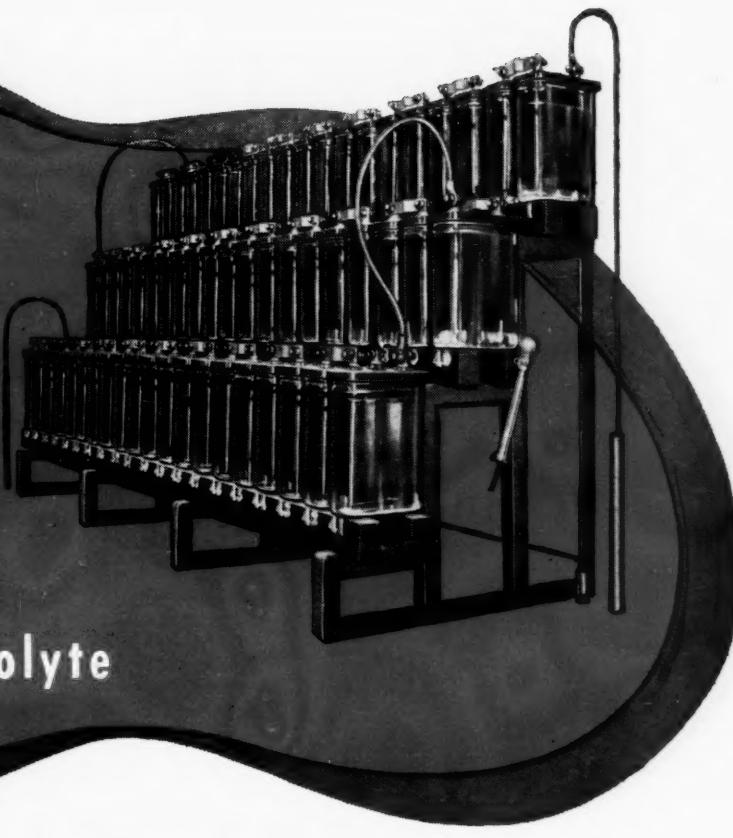
“Everything for Blasting”

ATLAS POWDER COMPANY, Wilmington 99, Del. • Offices in principal cities • Cable Address—Atpowco



# PROBLEM:

To find insulated  
cable for battery-  
charging leads—  
immune to  
attack by electrolyte



## SOLVED WITH **FLAMENOL CABLE**

An Ohio steel mill required insulated cable for its battery-charging equipment, which consisted of a 250-kw generator and a 27-panel switchboard. Cable was needed for leads from panels to batteries. As the leads ran underground, the cable insulation had to withstand moisture as

well as electrolyte fumes and accidental contact with the electrolyte itself. Four years ago, at G.E.'s suggestion, Flamenol\* Style FL insulated cable was selected for the job. The mill reports that the original installation is still giving trouble-free service.

**RESISTS CHEMICALS**—Flamenol Style FL cable is highly resistant to oils, water, mild acids, and alkalies—and weather. It is tough and stable, is flexible at low temperatures, and has high dielectric strength. Flamenol does not support combustion—therefore, prevents outages due to fires. Requiring no protective braid, it reduces the volume of wiring and eliminates terminating problems due to fraying. Its insulation strips easily and leaves the conductor surface untarnished.

**A G-E "FIRST"**—Only G.E. makes Flamenol cable. Flamenol is the original cable insulated with plasticized polyvinyl chloride. G.E. introduced it in 1935—not as a substitute for rubber-insulated cable but as a new type

possessing desirable properties not obtainable in rubber. To find out how Flamenol can help solve your problem—save you time, trouble, and expense—ask our local office, or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

\*Trade-mark reg. U.S. Pat. Off.

**GENERAL  ELECTRIC**

502-54-1200



It's the REASON  
for this fact  
that's important

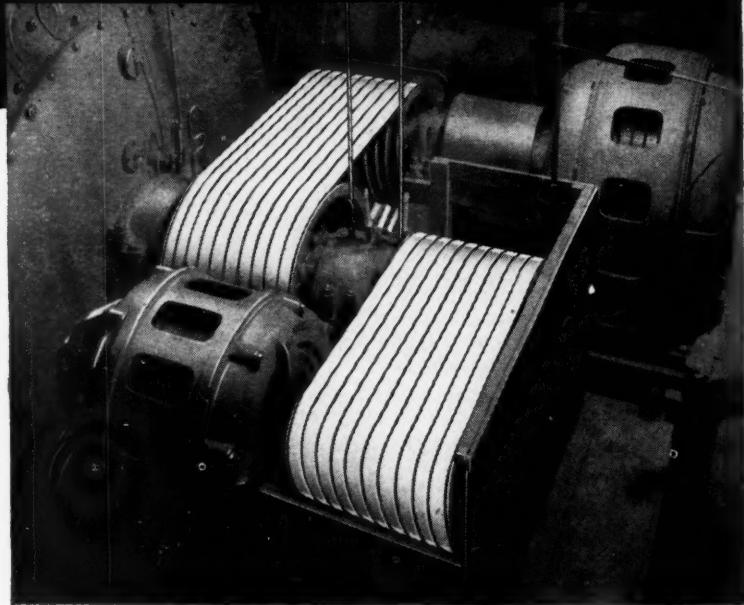
Your Standard GATES VULCO ROPES  
Are Today **OUT-PERFORMING Any V-Belts**  
Ever Built Before

Early in the war it was found that no V-belts then being built by anyone could stand the combat-service requirements of the Army's tanks, tractors, and self-propelled big guns. For this unprecedented severity of service, Gates developed and built V-belts far stronger and more durable than any V-belts ever built before—and here is why this fact is **NOW** important to YOU:—

*HERE is  
the reason*

Every improvement developed by Gates for these Army V-belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

Here is one of the very few instances in which improvements developed primarily for military use were passed on immediately to you. Ordinarily, that could not be done. Gates V-belts were made an exception because it was recognized that industry needed the best possible V-belts in order to achieve the greatest possible production—



and maximum production was one of the nation's vital needs.

That is why Gates has been able to pass on to you, day by day, every V-belt improvement developed for our armed forces during the war—and that is why your Standard Gates Vulco Ropes are today outperforming any V-belts ever built before!

All Gates  
V-Belts are  
Built With  
The Patented  
**CONCAVE  
SIDE**



THE MARK OF SPECIALIZED RESEARCH

**THE GATES RUBBER COMPANY**

Engineering Offices and Jobber Stocks in All Large Industrial Centers

462

**GATES** **VULCO** **DRIVES**

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.

LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.

PORTRLAND 9, ORE., 333 N.W. 5th Ave.

DALLAS 2, TEXAS, 1710 N. Market St.

SAN FRANCISCO 3, CAL., 170 Ninth St.

★ ★  
A TRANSPORTATION TIP FROM THE

# "Chairway to the Stars"

...LONGEST AERIAL TRAMWAY OF ITS TYPE IN THE WORLD!

Beautiful alpine Sun Valley, nestling in the heart of Idaho's Sawtooth Mountains, owned and operated by the Union Pacific Railroad Company, was commissioned in 1943 as a Special Navy Hospital for the rehabilitation of navy and marine casualties.



An American Aerial Tramway Installation

If distance, terrain and weather are obstacles in the profitable movement of products and materials from your mine to point of discharge, consider the U.S.S American Aerial Tramway installation at Sun Valley, famous alpine resort shown above.

While used to carry skiers instead of mine materials, the distance covered, the mountainous territory traversed and the elements encountered do prove the practicability of aerial tramway transportation.

One of these ski lifts covers a distance of more than two miles in climbing from the valley floor to the summit of gigantic Baldy Mountain, 3250 feet above. Known as the "Chairway to the Stars", it is the longest aerial tramway of its type in the world.

Aerial tramway transportation is independent of ground conditions. It can be operated the year 'round. It is smooth, fast and efficient. Even over level ground, it is considered economically sound . . . the cost-per-ton-mile being generally less than by any other method.

As the world's leading manufacturer of aerial tramways, we are in position to furnish you with a transportation system that may save you time, money and trouble in the movement of materials. Our engineers welcome an opportunity to discuss American Aerial Tramways with you.

**American Steel & Wire Company**  
*Cleveland, Chicago and New York*

**Columbia Steel Company**  
*San Francisco*  
*United States Steel Export Company, New York*

**UNITED STATES STEEL**

*U.S.S American Aerial Tramways*



# 75 Years Young

Upson-Walton, the only company in the United States which combines the manufacture of wire rope, wire rope fittings and tackle blocks, celebrates its 75th birthday this month.

By all standards, except spirit, ours is an old company. But spirit keeps us young so that, at 75, we look ahead..not back..to more mature development.

At 71, we built the newest wire rope mill in the country. In our 73rd and 74th years we made more engineering improvements in the Upson-Walton line than had been made for 20 years previously.

Now, at the ripe young age of 75 we enter the prime of our corporate life, confident that our years of greatest usefulness are still ahead. And that, more and more, a reconverting America will find that the improved Upson-Walton products are really better products.

## The Upson-Walton Company

MANUFACTURERS OF WIRE ROPE, WIRE ROPE FITTINGS AND TACKLE BLOCKS

NEW YORK • PITTSBURGH • CLEVELAND • CHICAGO

Copyright 1945—The Upson-Walton Company

# MORROW MECHANIZATION WIDENS



## spread between Cost and Sales Price

Morrow mechanical preparation equipment *raises product value, reduces labor, manpower and waste... cuts costs and speeds production!*

PRODUCT VALUE is raised because mechanized preparation produces clean coals of low impurity content, correct sizing and uniformity that win the better markets—and—the

higher prices.

Morrow Tipples *streamline* production from the mine—through modern preparation equipment—to cars and barges in shorter time, with

less labor—in the best condition to SELL!

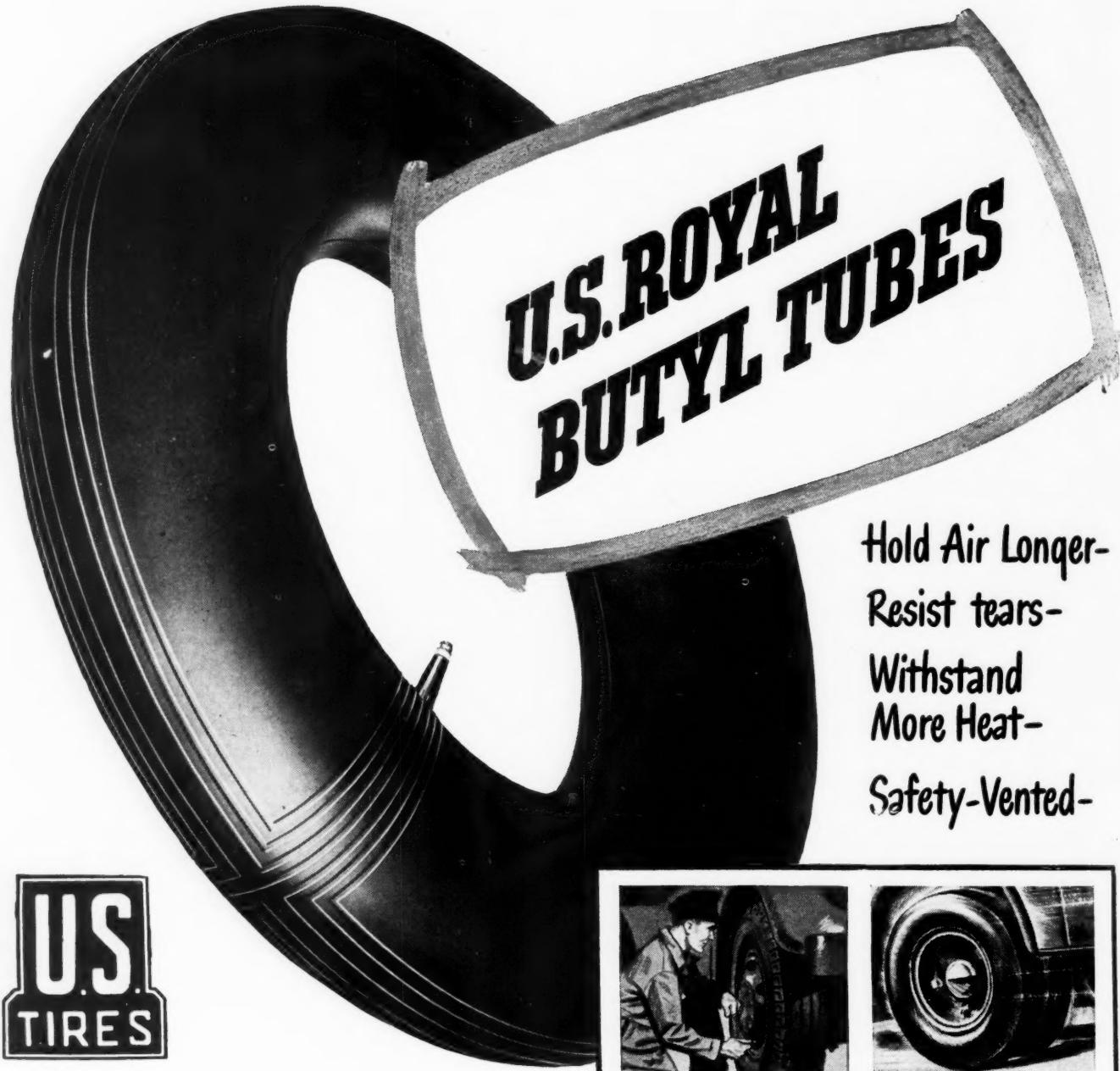
\* \* \*

Morrow engineers are available now to design and equip more efficient preparation plants. Ask Morrow to assign an engineer to study your situation. Write The Morrow Manufacturing Company, 1940 Ford Blvd., Wellston, Ohio. *Division The Wacker Corporation.*

Better Preparation  
= INCREASED SALES!  
1. low impurity content  
2. correct sizing  
3. high uniformity

MECHANIZE WITH  
**MORROW**

COAL WASHERS • WEIGH PANS • FEEDERS • DUMPS  
BINS AND BIN GATES • FLANGED LIP SCREENS  
CONVEYORS • LOADING BOOMS • SHAKING SCREENS  
VIBRATING SCREENS • CAR HAULS • PICKING TABLES  
SETTLING TANKS • ELEVATORS • CAR RETARDERS  
PERFORATED METAL SCREENS • STEEL STRUCTURES

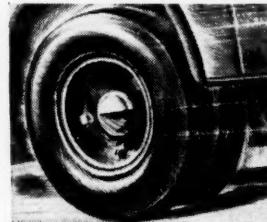


The experience of truckers from coast to coast—the results of grueling tests in "U. S." laboratories—show new U. S. Royal Butyl Tubes far and away better than natural rubber in air retention, heat, tear and age resistance, and in consistent serviceability. Because the danger of under-inflation is minimized, new U. S. Royal Butyl Tubes increase tire life—add extra miles of trouble-free service at lower cost per tire mile.

**SPECIFY U. S. ROYAL BUTYL TUBES FOR LOWER COST PER TIRE MILE!**

Phone Your U. S. Truck Tire Distributor Today!

Hold Air Longer-  
Resist tears-  
Withstand  
More Heat-  
Safety-Vented-



**HOLD AIR LONGER**

U. S. Royal Butyl Tubes hold air far longer than tubes of natural rubber.



**RESIST TEARS**

U. S. Royal Butyl Tubes have higher tear resistance. They're easier to repair.

**WITHSTAND MORE HEAT**

U. S. Royal Butyl Tubes have superior heat resistance. They minimize roadside delays.



**SAFETY-VENTED**

Exclusive "U.S." Safety-Venting allows release of air trapped between casing and tube.

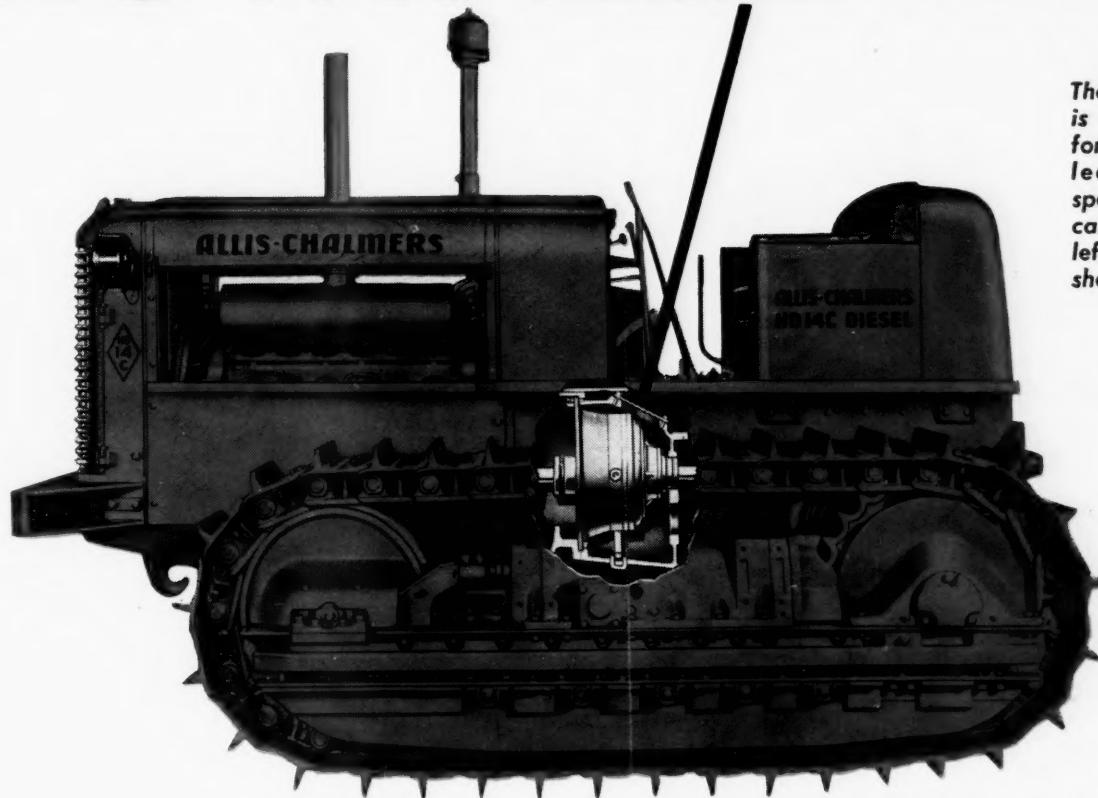


**UNITED STATES RUBBER COMPANY**

Listen to "Science Looks Forward"—new series of talks by the great scientists of America—on the Philharmonic-Symphony program, CBS network, Sunday afternoon, 3:00 to 4:30 E.S.T.

1230 AVENUE OF THE AMERICAS  
ROCKEFELLER CENTER • NEW YORK 20, N. Y.

# NOW... A TORQUE CONVERTER TRACTOR



The torque converter is simply a device for automatically selecting maximum speed at which load can be moved. At left is cutaway view showing location in tractor.

## ALLIS-CHALMERS MEETS THE NEED

Here it is . . . the tractor of the times . . . torque converter driven . . . tried, tested, proved over the last five years on every type of construction work . . . now in full production! It's revolutionary — different from any tractor you've ever seen . . . amazing, the way it smooths out and steps up tractor performance.

25% MORE WORK is accomplished because horsepower output of engine is held near maximum — the torque converter balances tractor speed with load to give maximum operating speed at all times. This means many more yards moved.

LESS GEAR SHIFTING, less operator fatigue, because the torque converter instantly, automatically does, in effect, what the operator

of a conventional tractor accomplishes when he shifts gears — makes available the necessary pull or push to handle the load. The engine cannot be overloaded or stalled — keeps running even when an extreme overload pulls tractor to a standstill.

SMOOTHER OPERATION — longer tractor life and longer life of auxiliary equipment is assured by smoother operation. There is gradual acceleration and even application of power — of particular advantage in lengthening the life of cable.

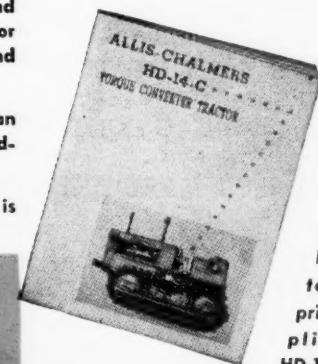
CUSHIONED PROTECTION — cushion of oil eliminates solid contact between engine and power train, protecting all parts of tractor and auxiliary equipment against shock and abuse.

MORE ACCURATE CONTROL — operator can inch into any desired position smoothly, gradually, safely.

SIMPLIFIED DRIVE — the torque converter is

a simple mechanism, only two moving parts separated by a cushion of oil. In addition, transmission is simplified — three forward speed ranges cover every need, with operation in any gear from zero to maximum — up to 2.89, 3.61, 7.13 m.p.h. . . . to 3.36 m.p.h. reverse.

You will want to investigate these and the many other advantages of this revolutionary, money-making Diesel tractor. Get all the facts from your Allis-Chalmers dealer.



FREE

Write for this  
book:

"Allis-Chalmers  
HD-14-C Torque  
Converter Tractor"

Fully explains  
torque converter  
principle and its ap-  
plication to the  
HD-14-C.

# ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

# How's your Profit



The type of experienced sales facilities required to cope effectively with the coming change of the emergency coal market into a buyer's market may not now be part of your equipment.

*There is still time to provide it.*

Quick footwork and extra sales effort are always the best formula for profitable production.

Extra effort pays best when it is done with professional coal-selling tools . . . *a good coal sales company.*

To insure maximum operating profit, make a permanent sales connection with an American Coal Sales Association member...TODAY.

## *How to determine your score*

Have you thought about the conditions which are likely to surround coal markets of the future. Run through and post your answers to the seven questions in the "Coal Selling Quiz" on the opposite page.

When you have finished, count your "Yes" and "No" answers. If you answered over five questions "Yes" you are pretty well fixed. If not...

**You had better make a connection with a good coal sales company right now.**

AMERICAN COAL *Sales* ASSOCIATION... Washington, D.C.

# COAL SELLING

YES

NO

## CHECK YOUR ANSWERS HERE

1. Can you count on war-time customers as post-war customers?

2. Will your present sales efforts, in a buyer's market, assure your mine sufficient running time to yield maximum profits?

3. Can you afford a sales force of your own to intensively cover all possible markets for your coal?

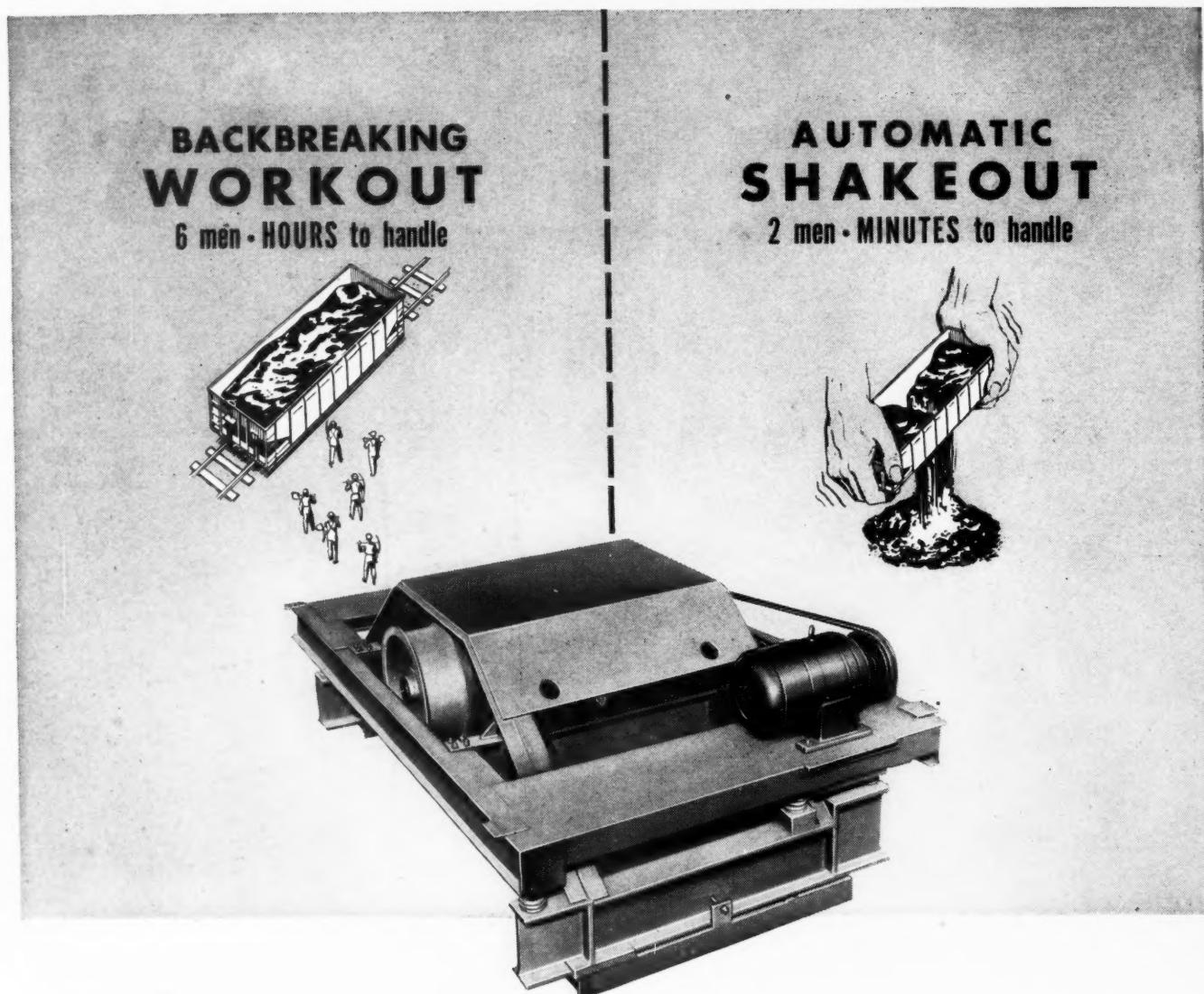
4. Can you devote 100 per cent of your time to preserving and expanding markets for your coal?

5. Do you know, or have you the facilities to determine, which are the most profitable markets for your coal?

6. Is your sizing and preparation tailored to customer demand and maximum realization?

7. Do you have time and facilities to determine if all of your present and new accounts are good credit risks?





## Announcing the new Robins Car Shakeout

Here's another Job-Engineered 1st—by Robins—that is literally taking the country by storm. This startlingly new car shakeout actually accomplishes what its name implies. Operating at high speed, it literally *shakes* a load of coal, coke, or ore through the hopper doors at the bottom of the railroad car. A tightly packed 70- or 100-ton car is unloaded in a matter of minutes—broom clean. Work that previously required six men can be done by two. Railroads endorse this new Robins

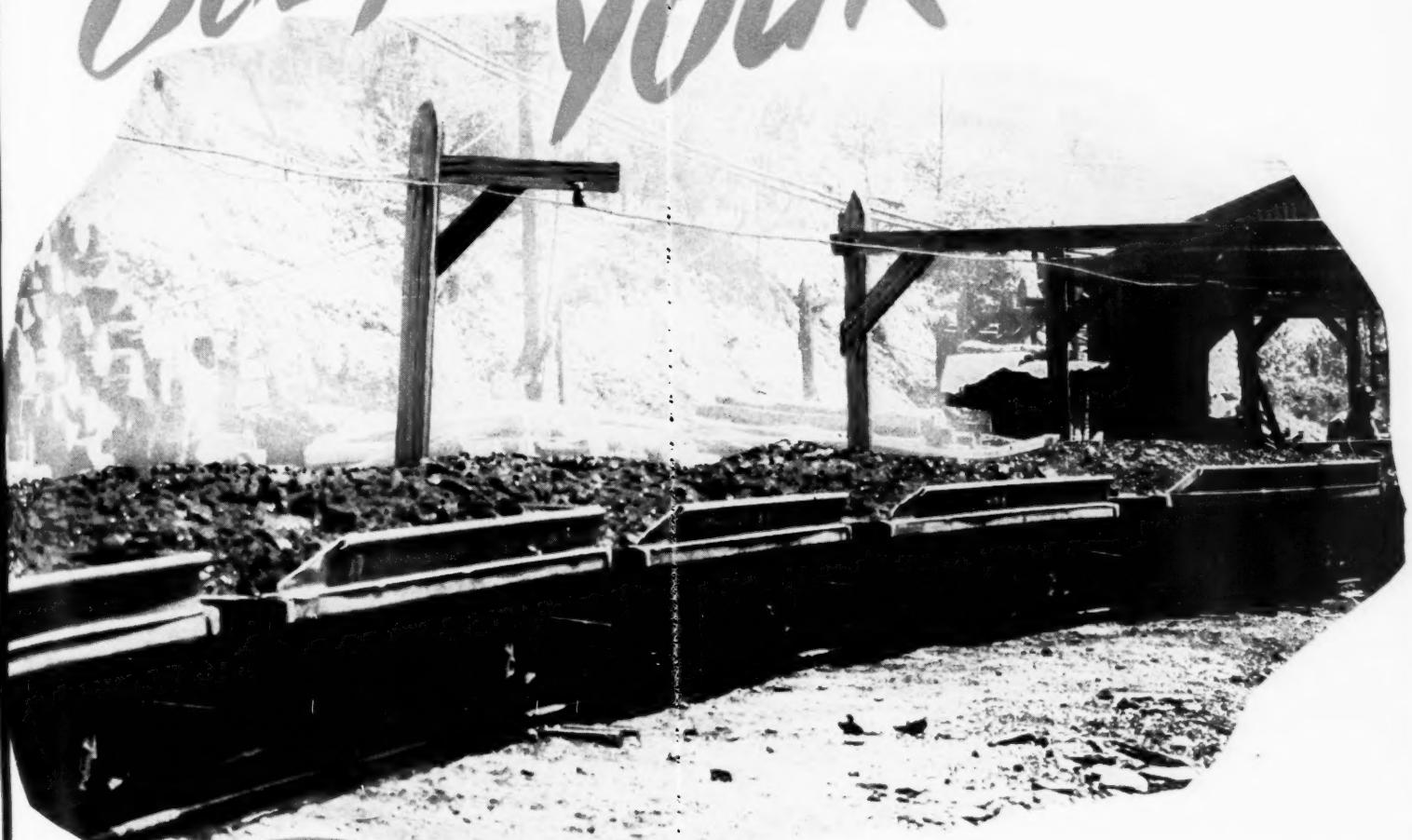
product which injures neither cars nor unloading facilities in any way. And it's so versatile and portable that it can be used virtually anywhere a coal or ore car is to be unloaded. No elaborate installation or housing construction is necessary. A note on your letterhead, or a phone call, will bring complete literature or a Robins Job-Engineer to your desk to prove how this new car shakeout, exclusive with Robins, can virtually eliminate bulk materials unloading problems.

AMERICA'S ONLY COMPLETE MATERIALS HANDLING SERVICE

Hewitt and Robins unite to offer you 136 years of combined experience in Job-Engineered rubber products and machinery designed to answer any materials handling problem you may have.

**ROBINS**  
CONVEYORS INCORPORATED  
PASSAIC, NEW JERSEY  
DIVISION OF HEWITT RUBBER CORPORATION

*Designed for  
your mine...*



**a.c.f.**  
**DROP-BOTTOM**  
**MINE CARS**

**a.c.f.** Drop-Bottom Mine Cars are truly designed to meet the operating conditions of your mine. A.C.F. engineers give careful study to your service requirements, so that your cars are best suited to your needs!

A.C.F. Drop-Bottom Cars are fitted with all-welded steel end sill members, heavy-duty, double-action spring bumpers and "lubricated" doors to insure years of satisfactory service — resulting in lower haulage costs and increased production!

You really should see these remarkable cars in actual operation to appreciate fully the possibilities they offer for your mine.

Why not telephone or write our nearest sales office for a demonstration? Our Sales Representatives will gladly make the necessary arrangements.

**a.c.f.** **AMERICAN CAR AND FOUNDRY COMPANY**

New York • Chicago • St. Louis • Cleveland • Philadelphia  
Berwick, Pa. • Pittsburgh • Huntington, W. Va.

# BATTERY-POWERED *Shuttle Cars*

**Reduce  
Power Peaks**



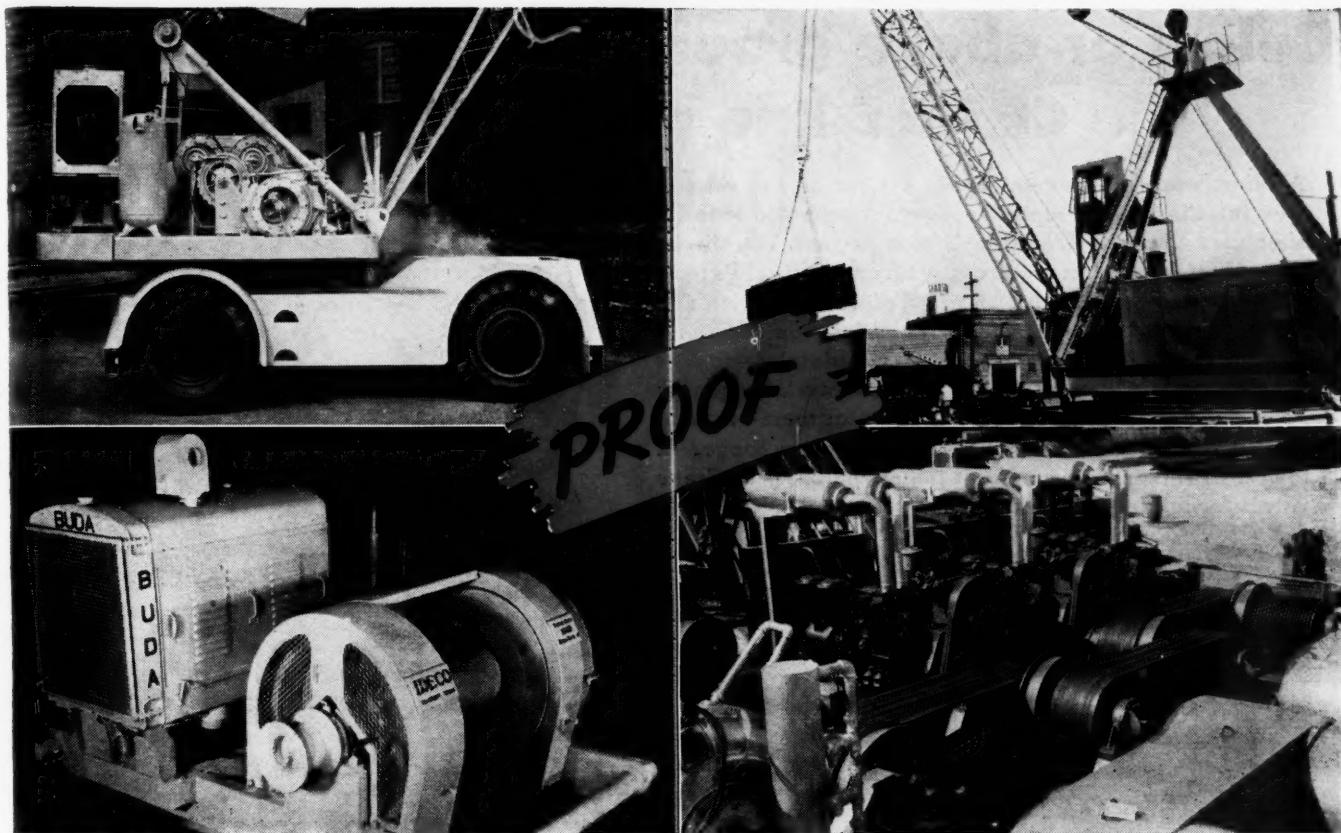
**...ALKALINE BATTERIES  
Reduce Dead Weight**

**B**ECAUSE battery-operated shuttle cars carry their own power supply, they place no load on the mine d-c power supply while operating. Their batteries can usually be charged during off-peak hours thus reducing maximum power demand. A lower maximum demand is assured even when continuous shuttle car operation requires constant charging of exchange batteries, because a charging load is always more steady than a gathering load.

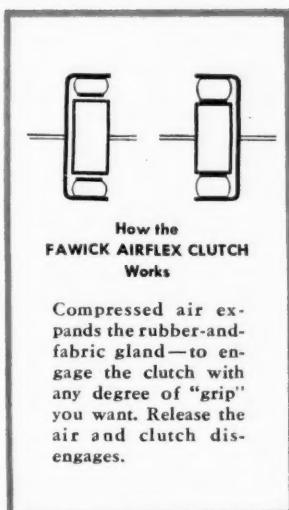
High operating flexibility is also obtained with battery-powered shuttle cars. Being self-contained units, they can take the shortest practical route from face to loader and back. No time is lost in making and breaking external power connections or round-about maneuvering to avoid running over them. They are also easiest to keep in working order because they have the minimum number of working parts.

Altogether, the superior flexibility, high availability and overall operating and maintenance economy of the battery-powered shuttle car make it an inherently dependable and efficient haulage unit . . . especially when powered with Edison Alkaline Batteries. With steel cell construction, an electrolyte that is a preservative of steel, and a fool-proof electrochemical principle of operation, they are the longest-lived, most trouble-free and most durable, yet lightest, of all mine haulage batteries. The Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. In Canada: International Equipment Co. Limited, Montreal and Toronto.

**Edison**  
ALKALINE BATTERIES

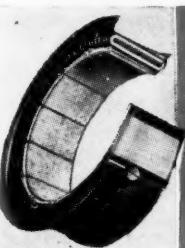


## How to write CLUTCH SPECIFICATIONS for Heavy-Duty Drives . . .



- Do you want air-cushioned torque control—direct or remote?
- Do you want shock and vibration absorbed by a cushion of air?
- Do you want *uniform* clutch engagement, at all speeds, under all loads?
- Do you want complete freedom from troublesome moving parts—such as springs, arms, levers and toggles?
- Do you want complete freedom from lubrication and adjustment?
- Do you want lower operation and maintenance costs?

If you check these points YES, let our Engineering Department give you recommendations. Book on request.



**FAWICK** *Airflex* **CLUTCH**

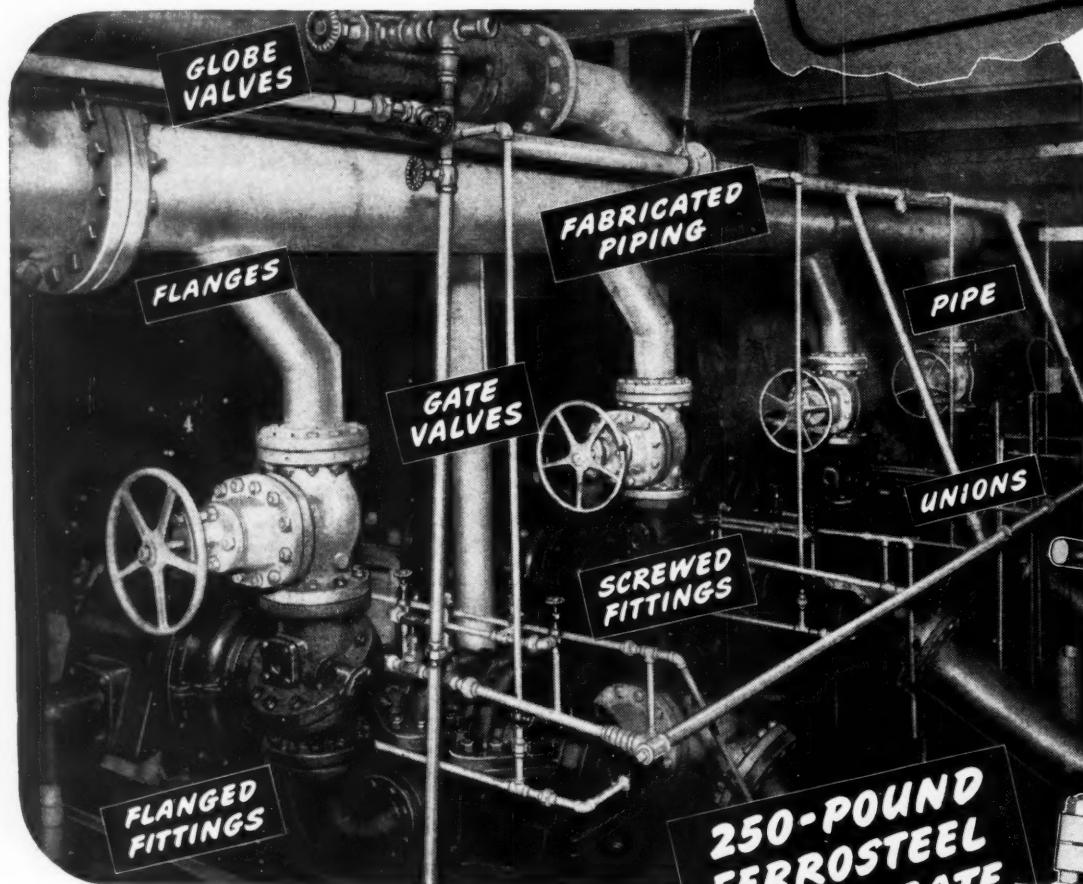
FAWICK AIRFLEX CO., INC. • 9919 Clinton Road, Cleveland 11, Ohio

In Canada: Raymond-Country Ltd., Montreal, Quebec

In Britain: Cyclo Engineers, Ltd., Bradford, England

# Below or above ground... the CRANE line meets all Piping needs

Air line, water line, steam piping system or any other—new installations or replacement work—the whole job is simplified when the Crane line is your partner. You specify all equipment to exact requirements from the world's most complete selection of valves, fittings, pipe, accessories, and fabricated piping. Everything for the job comes from a single source—your Crane Branch or Wholesaler—to save you time and trouble in ordering. One dependable quality in all materials—and one responsibility for them—assures your getting installations that keep working longer at lowest cost. As one example of the adaptability of Crane valves for mining services, see below.



**250-POUND  
FERROSTEEL  
WEDGE GATE  
VALVES**



#### SERVICE RECOMMENDATIONS:

Crane 250-pound Ferrosteel Wedge Gate Valves are recommended for services that are too severe for Standard Weight valves but where the use of steel valves is not required. Brass trimmed or all-iron. Working pressure ratings: 250 pounds steam; 500 pounds, cold. Ideal for oil, water, steam and other fluids that do not corrode brass or iron. Made in O.S.&Y. and in Non-Rising stem patterns; with flanged ends up to 12 in.; with screwed ends up to 4 in. Listed on pages 110 and 111 of your Crane Catalog.

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. • Branches and Wholesalers Serving All Industrial Areas

# CRANE

VALVES • FITTINGS • PIPE  
PLUMBING • HEATING • PUMPS

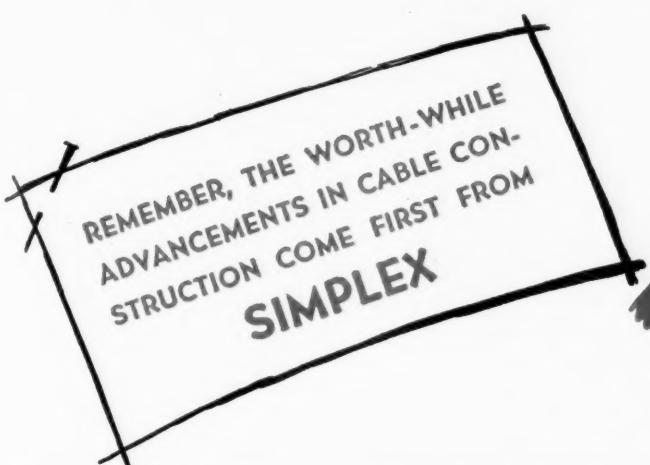
# WHAT DO YOU BUY IN A CABLE?

RUBBER COPPER  
TIN LEAD  
TAR STEEL  
PAPER  
PLASTICS  
SYNTHETICS  
RESEARCH

When you buy an insulated cable, what do you expect to <sup>ENGINEERING &</sup> get for your money? Do you merely buy pounds of raw materials <sup>MANUFACTURING</sup> to be made into a cable, or do you want your dollars to buy expert <sup>SKILL</sup> know-how, advanced research, engineering and manufacturing skill?

The raw materials of an insulated wire or cable are easily obtainable but it's the manufacturing skill, the engineering know-how and the advanced research that go into the wire or cable that make these raw materials into something that you can depend upon to transmit electrical energy safely and give long life and trouble-free operation.

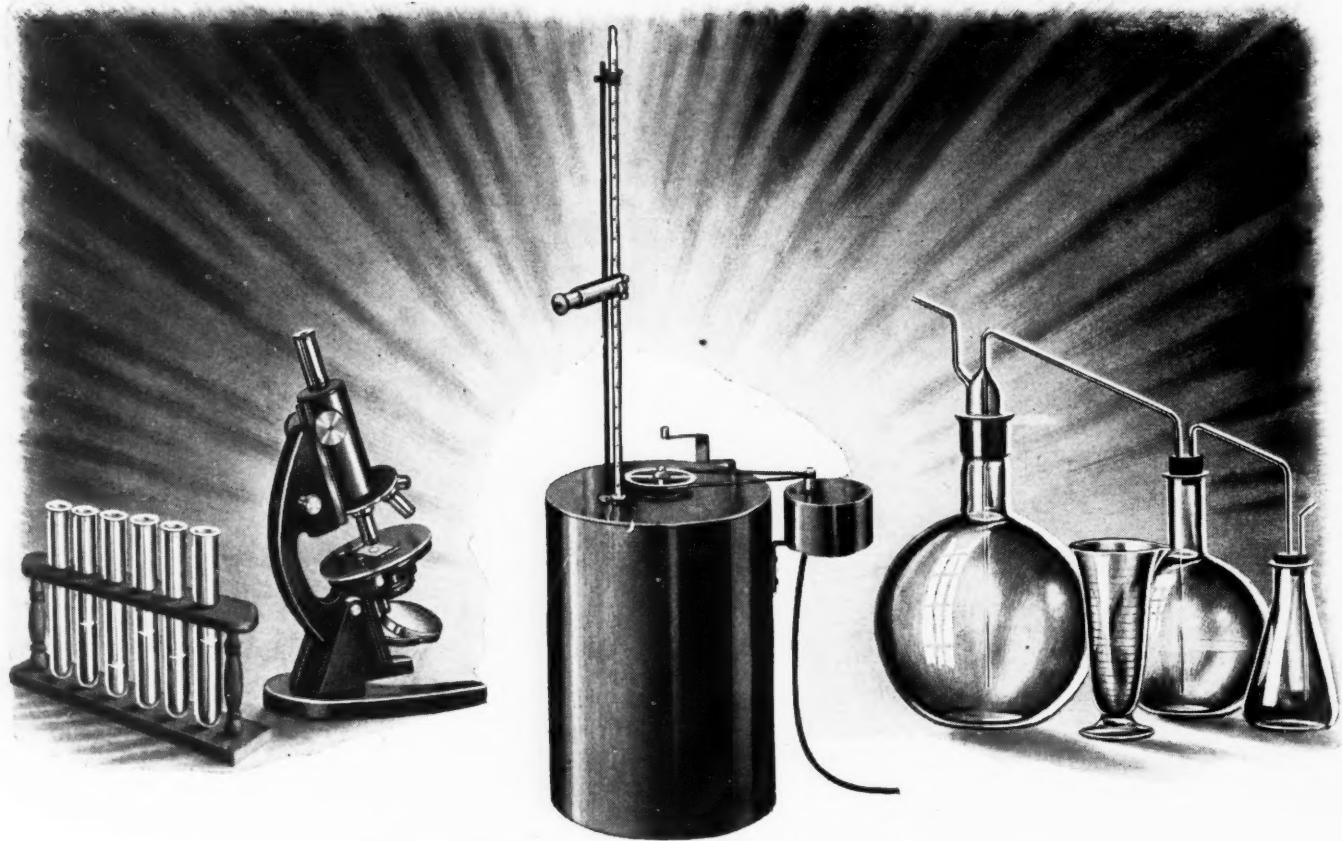
When you get ready to exchange your hard-earned money for a piece of insulated wire or cable, remember that Simplex is the place that specializes in advanced research, in unexcelled manufacturing skill, and in know-how brought about by over forty years of manufacturing experience.



*Simplex*

WIRES AND CABLES

SIMPLEX WIRE & CABLE CO., 79 SIDNEY ST., CAMBRIDGE 39, MASS.



## *This is a Bomb*

WELL, to be exact, it is a "bomb calorimeter," used for measuring the heat content of coal. It is essential equipment in any coal-research laboratory.

Today, you know, more money is being put into coal research than ever before. The Chesapeake and Ohio Railway is an active collaborator in this work. Here is a list of objectives now being sought through such research:

- Better hand-firing equipment
- Improved stoker design
- Better means of dust-proofing coals
- Improved over-fire air jets
- Improved locomotive-draft design
- Coal and air flow in pulverized-coal systems
- Studies leading to higher heat-release and heat-transfer rates
- Application of coal to gas turbines
- Improved pulverizer design
- Demands of good combustion
- Coal hydrogenation
- Standards of coal quality
- Production of acids from coal
- Electric-coke-oven design
- Production of smokeless fuels from coal
- Evaluation of stoker coals
- Smokeless combustion of high-volatile coals in hand-fired heating devices
- Low-temperature carbonization
- Coking coals
- Coal by-products
- Automatic ash-removing domestic stokers
- Industrial stoker design

Non-fuel uses of coal  
 Gasification of lignite and sub-bituminous coals  
 Storage of coal  
 Behavior of coal-ash slags  
 Control of clinkering  
 Coal test methods

This list does not include what is being done and attempted in the field of coal derivatives. Merely to catalog researches now being conducted in the chemistry of coal would require volumes.

The Chesapeake and Ohio not only shares in the development of better coal-burning techniques and equipment, but is actively preaching the gospel of coal to the public. This is evidenced by C & O advertising in 446 newspapers, national magazines, and trade papers, featuring the virtues of coal and the achievements of the coal industry.

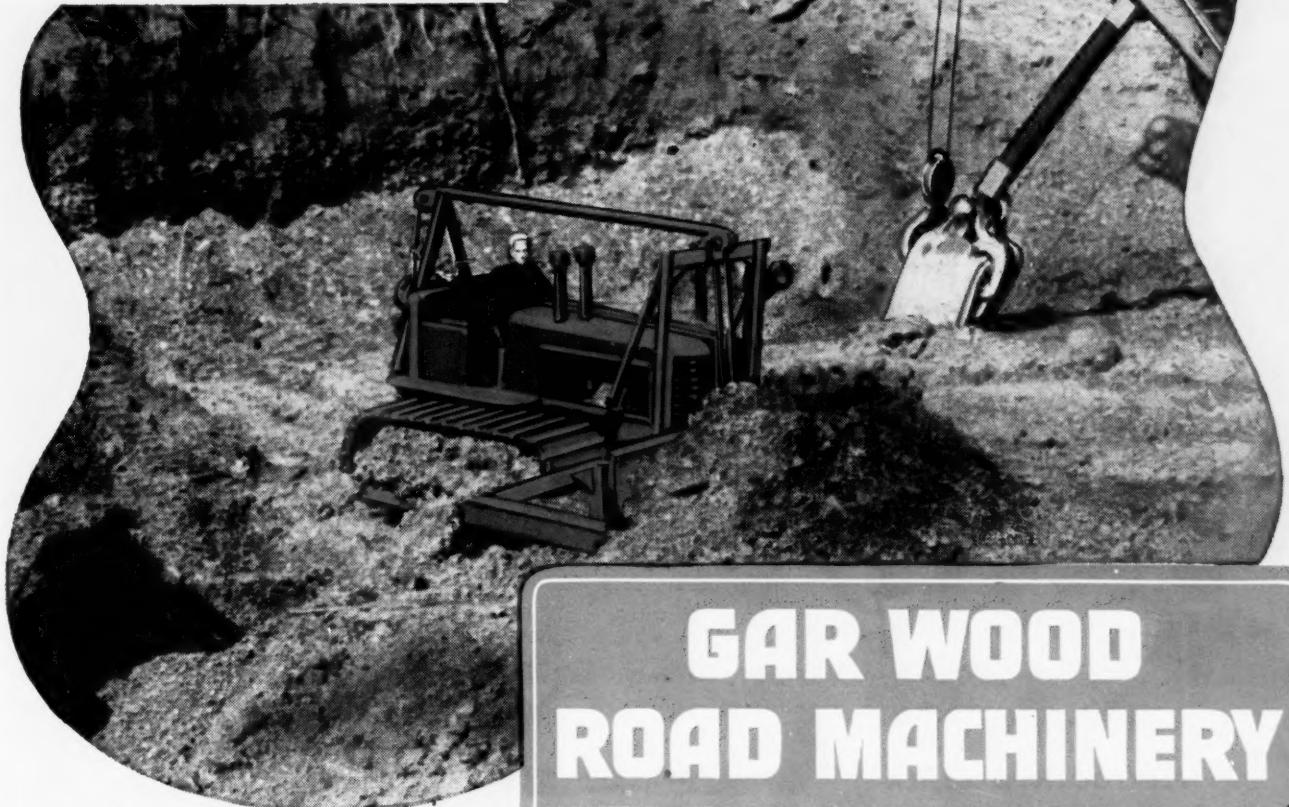
Furthermore, the Chesapeake and Ohio follows its own recommendations by applying the efficiency and economy of coal to the hauling of its own freight and passenger trains. When you ship via Chesapeake and Ohio you know your coal is being hauled exclusively by coal-burning locomotives.

### THE CHESAPEAKE AND OHIO RAILWAY

*"The 100% Coal Railroad"*

*"Superchargers"*

## FOR STRIP PIT MINES



Gar Wood Cable Dozecaster "feeds" power shovel, speeds stripping in Pennsylvania open pit coal mine.

## GAR WOOD ROAD MACHINERY WITH ALLIS-CHALMERS DIESEL POWER

Like the power-boosting superchargers of modern internal combustion engines, Gar Wood Bulldozers, Dozecasters and Scrapers "supercharge" the production efficiency of open pit mines.

They "feed" power shovels and drag line scoops, speed up stripping, clean surfaces, level spoil and build roadways so trucks can roll at full speed. In strip pit operations of all kinds, this versatile,

modern equipment is helping to step up output and make possible profitable operations despite the increased costs of labor and material.

Thoroughly mine-proved, Gar Wood units are preferred by many leading operators as shown by the present volume of orders—the greatest by far in Gar Wood history. Place your orders now with your local Allis-Chalmers dealer.



Gar Wood Hydraulic Dozecaster cleans surface of ore bed.

Gar Wood Cable Scraper moves overburden, levels roadways.



GW ROAD MACHINERY  
is Sold Through  
**ALLIS-CHALMERS**  
Dealers Everywhere

ROAD MACHINERY DIVISION

**GAR WOOD INDUSTRIES, Inc.**

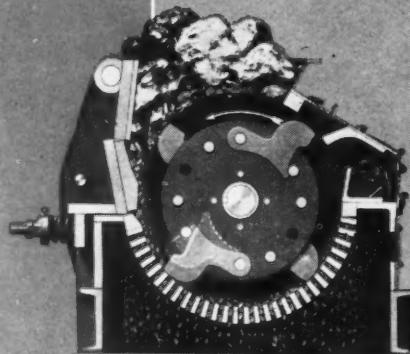
DETROIT 11, MICHIGAN

OTHER PRODUCTS OF GAR WOOD INDUSTRIES INCLUDE HOISTS AND BODIES • WINCHES AND CRANES • TANKS • HEATING EQUIPMENT • MOTOR BOATS



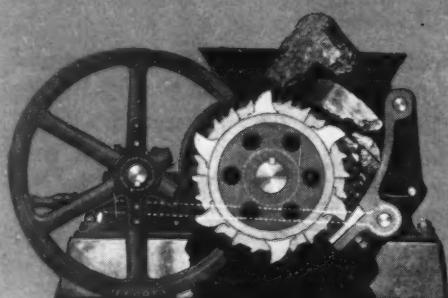
## BOTH SALES AND PROFIT DEPEND ON PROPER SIZING

More than ever before, coal to SELL right must be SIZED right. Jeffrey has specialists who know coal sizing from A to Z.



FLEXTOOTH CRUSHER  
(Patented)

THEN LET'S CALL  
IN JEFFREY



SINGLE ROLL CRUSHER



**THE JEFFREY**  
**MANUFACTURING COMPANY**  
**912-99 North Fourth St., Columbus 16, Ohio**

Baltimore 1   Buffalo 2   Cleveland 13   Herkies   Milwaukee 11   Pittsburgh 22  
Birmingham 3   Chicago 1   Denver 2   Houston 5   New York 7   St. Louis 3  
Boston 16   Cincinnati 2   Detroit 12   Huntington 19   Philadelphia 2   Salt Lake City 1  
Scranton 3

ESTABLISHED 1877



# WORLD'S NUMBER 1 TRUCK!

When you buy a Mack, you buy a truck that is built to *work harder, longer, and at a lower per-day cost* than any other truck in the world!

"That's right, Mister Truck-Buyer—because of Mack quality factors such as:

- *A liberal use of heat-treated steel alloys.*
- *Tetrapoid instead of conventional gears.*
- *Rubber Shock Insulators in place of the usual spring shackles.*
- *Wristpins finished to one ten-thousandth of an inch.*

"They're all part of Mack quality . . . part of the forty-six years of experience and craftsmanship that go into the making of every Mack Truck you buy today. The records of American business, in every field in which trucks are used, prove over and over again that 'You can't beat a Mack for performance.'

"Macks have been making money for their owners for nearly half a century. They can make money for *you*. When you next buy a truck, buy a Mack!"

*Mack Trucks, Inc., Empire State Building, New York City. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.*

**Mack**  
TRUCKS  
FOR EVERY PURPOSE

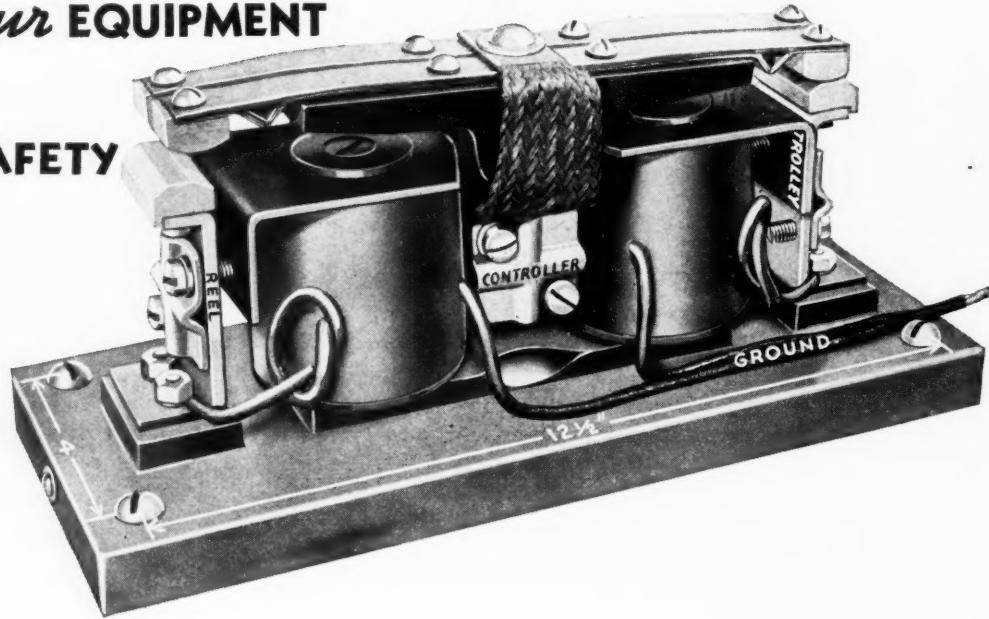


Performance  
Counts



**PROTECTS *your* EQUIPMENT**

**PROMOTES SAFETY**



**ENTIRELY Automatic . . .** P-G Automatic Transfer

Switches are designed for use on all types and makes of gathering locomotives.

Automatically transfers the current from trolley to reel, or vice-versa. Hand operated switches are eliminated.

Promotes safety—avoid shocks or burns to operator while changing from trolley to reel.

Simple in design, easy to install, requires very little space, and can be mounted anywhere. Furnished complete with cover.

Heavy duty coils provide for positive contact through double contact assembly. Contacts are easily renewable.



**THE POST-GLOVER ELECTRIC COMPANY**

• ESTABLISHED 1892 •

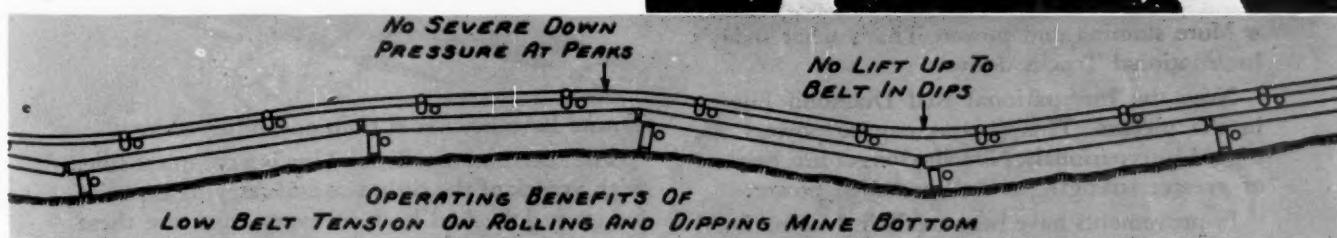
221 WEST THIRD STREET, CINCINNATI 2, OHIO

# UNDERGROUND HIGHWAY to PROFIT



**A** La-Del belt conveyor, easily and quickly installed and *economical to operate*, provides a direct road to more profitable operation. The smooth, continuous flow of coal from the face, made possible through the use of La-Del belt conveyors, saves time, money and manpower.

For example, a La-Del belt conveyor requires minimum headroom and will operate efficiently over rolls and dips in the mine bottom. That's time saved from non-productive tasks; man-hours that can be devoted to producing coal. La-Del conveyors are designed for a specific job . . . to move your coal quickly and economically. There's a host of features on La-Del belt conveyors that you'll want to know about if you're looking for peak production at minimum cost.



**Other LA-DEL Equipment for the Mines** . . . Shaker Conveyors • Chain Conveyors • Elevating Heads • Pit Car Loaders • La-Del Troller Mine Ventilating Fans and Blowers • and La-Del Experienced Engineering Counsel . . . Before and After Installation.

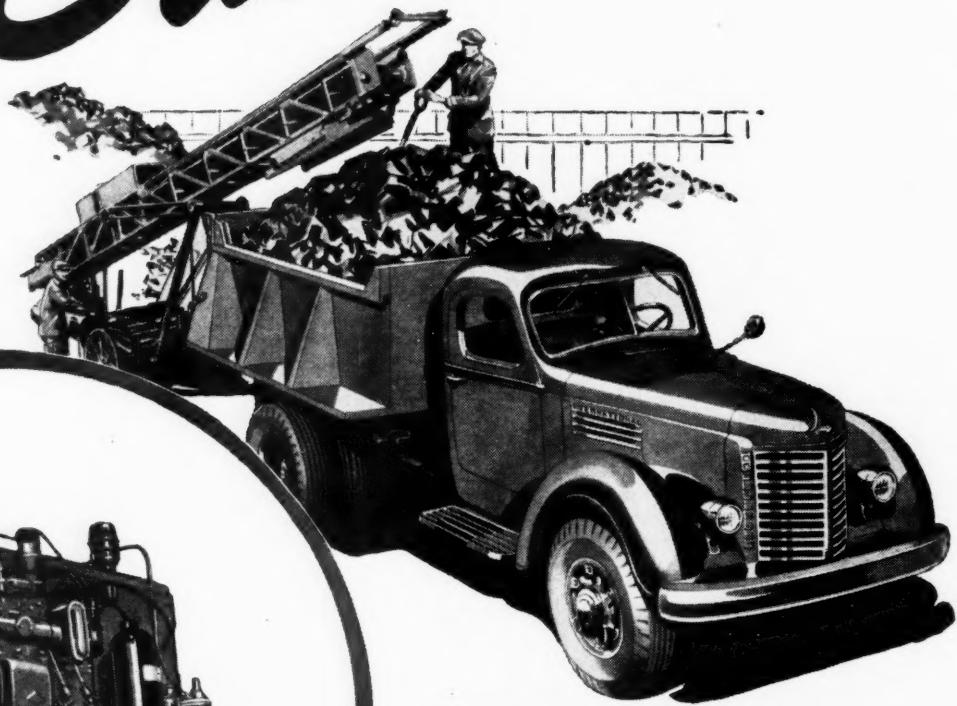
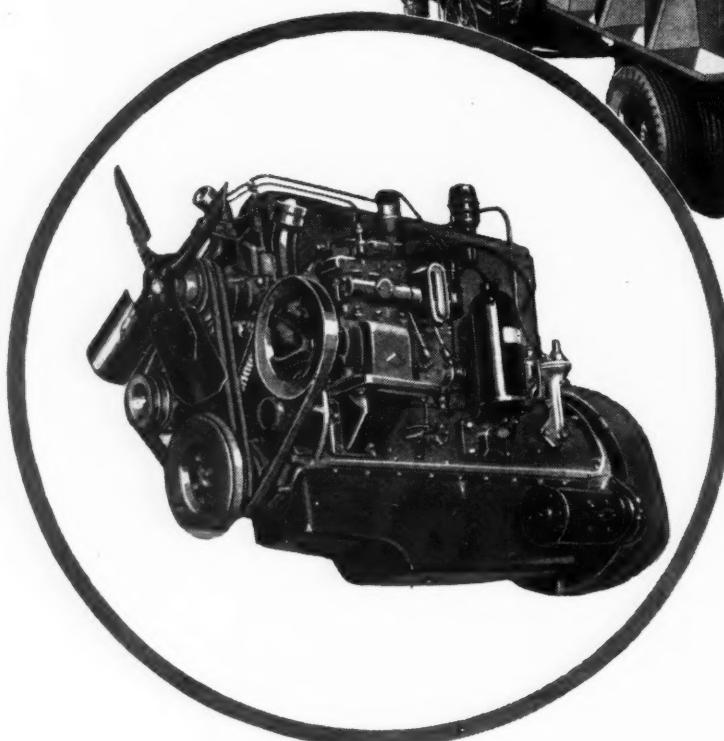
MATERIAL HANDLING  MINE VENTILATION

**LA-DEL**

**CONVEYOR AND MANUFACTURING CO.**  
New Philadelphia, Ohio

COMPLETE LINE OF UNDERGROUND CONVEYORS FOR LOW COST OPERATION

# TRUCK *Stamina*



## FOR TOUGH TRANSPORT



• More stamina and power. That's what today's International Trucks deliver.

Note the International Red Diamond Engine in the picture. This famous engine powers the bigger Internationals. Now has longer life, because of greater strength, as well as added power.

Improvements have been made in International Truck Chassis, too—improvements to step up even further the economy, ease of operation and long, trouble-free service that are the outstanding features of International Truck performance.

So outstanding is this performance that in the last fourteen years more heavy-duty International

Trucks have been sold than any other make.

The International Truck Line is a complete line, with a truck of the right size and carrying capacity for every job. And back of every truck are these top service facilities—a network of International Truck Dealers and a system of International Truck Branches that form the nation's largest company-owned truck service organization.

INTERNATIONAL HARVESTER COMPANY  
180 North Michigan Avenue Chicago 1, Illinois



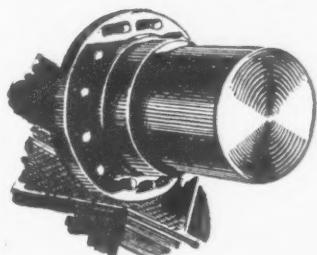
LISTEN TO "HARVEST OF STARS" EVERY SUNDAY! NBC NETWORK

# INTERNATIONAL Trucks

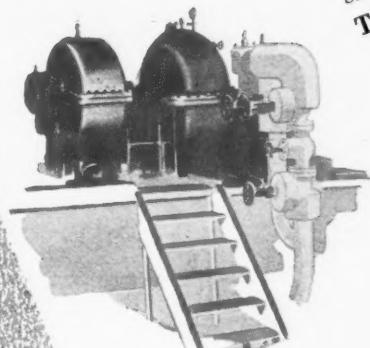
# FOR EVERY SERVICE CONDITION...

You can count on

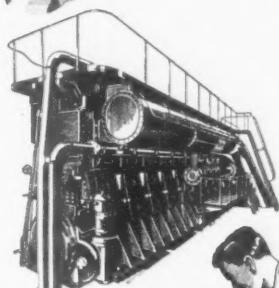
# TYCOL "ENGINEERED LUBRICATION"



**EXTREME PRESSURE GREASE**—“Never a single bearing failure since we changed to Tycol E.P. Grease.”



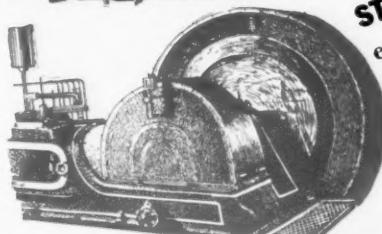
**TURBINE OIL**—“70,000 hours continuous operation . . . oil still in excellent condition.”



**DIESEL OIL**—“No more trouble with sticking Valves . . . costly delays and overhauls eliminated . . . engines giving better service . . .”



**NO-RUST-OLS**—Prevent rust formations on machines—small parts prior to assembly—and finished products. Usable at all temperatures by spraying, brushing, swabing or dipping.



**STEAM CYLINDER OIL**—“We saved 33 1/3% engine lubrication costs when we changed to Tycol Cylinder Oil.”

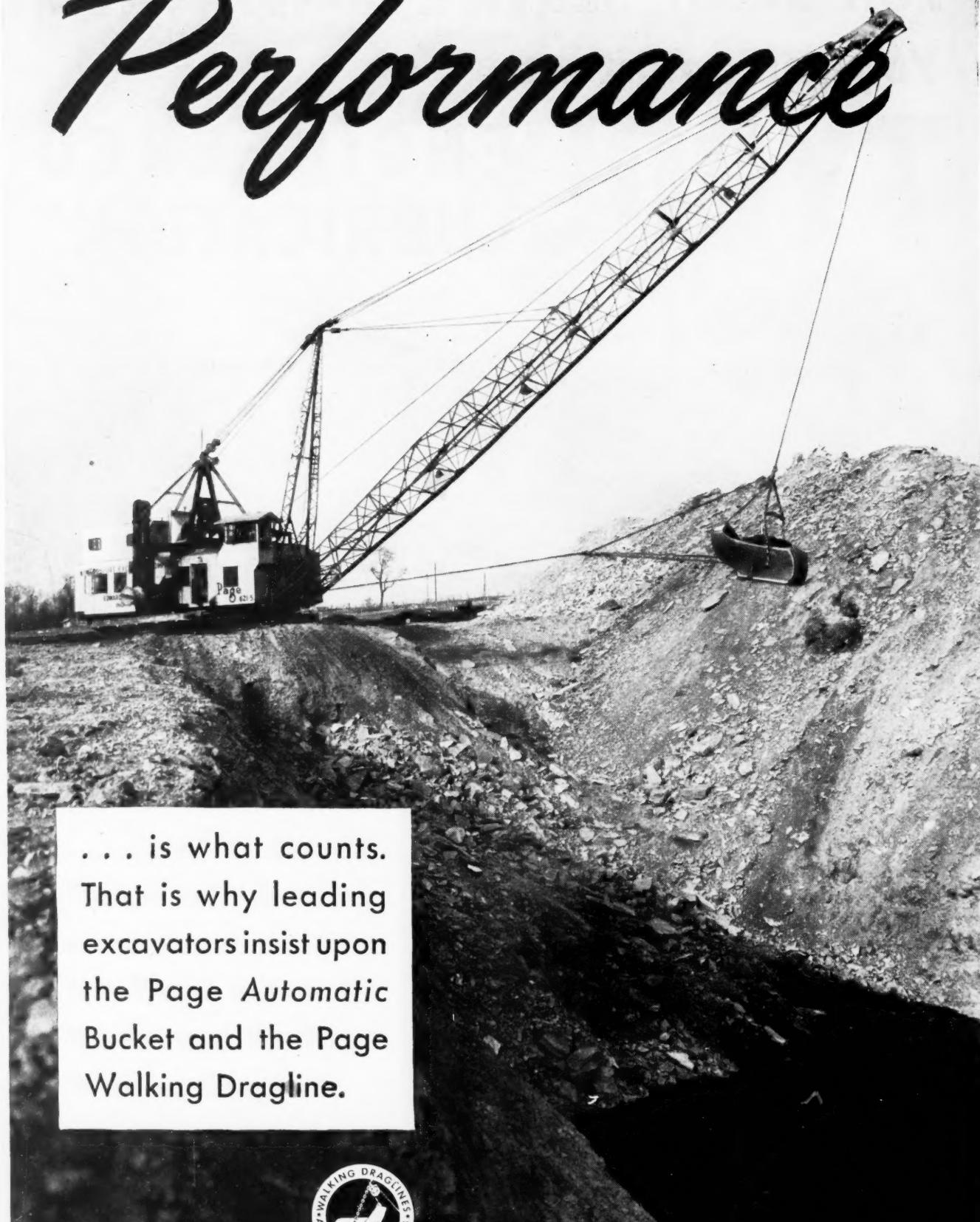


• Results such as these are typical where Tycol lubricants are specified. Call, write or wire your nearest Tide Water Associated office for full details about the lubricant best suited to your needs.

*Lubrication—“engineered to fit the job”*



# Performance



... is what counts.  
That is why leading  
excavators insist upon  
the Page Automatic  
Bucket and the Page  
Walking Dragline.



**PAGE** ENGINEERING COMPANY  
CHICAGO 38, ILLINOIS

*The Tougher the Job..*  
THE GREATER THE NEED FOR  
**Firestone**  
**OFF-THE-HIGHWAY TIRES**



THE cord bodies of the Firestone Rock Grip Excavator, the All Non-Skid Earth Mover and the Ground Grip Heavy Duty tires are made of highest quality rayon. The rayon plies are Gum-Dipped, a patented Firestone process, which increases their durability. Four additional tread plies cushion and absorb impact blows. Sidewalls are built double thick to protect against rutwear and snags. The tread rubber is extra tough—cut-resistant.

These facts explain the performance record of Firestone Off-the-Highway tires. You need tires that can take grueling punishment and stay on the job — minimizing time-consuming, costly delays. Put Firestone tires on your Off-the-Highway Equipment.

*Listen to the "Voice of Firestone" every Monday evening*



Copyright, 1946, The Firestone Tire & Rubber Co.

# For SALE or RENT—

**—a faster, more profitable means  
for transportation of coal at your mine**

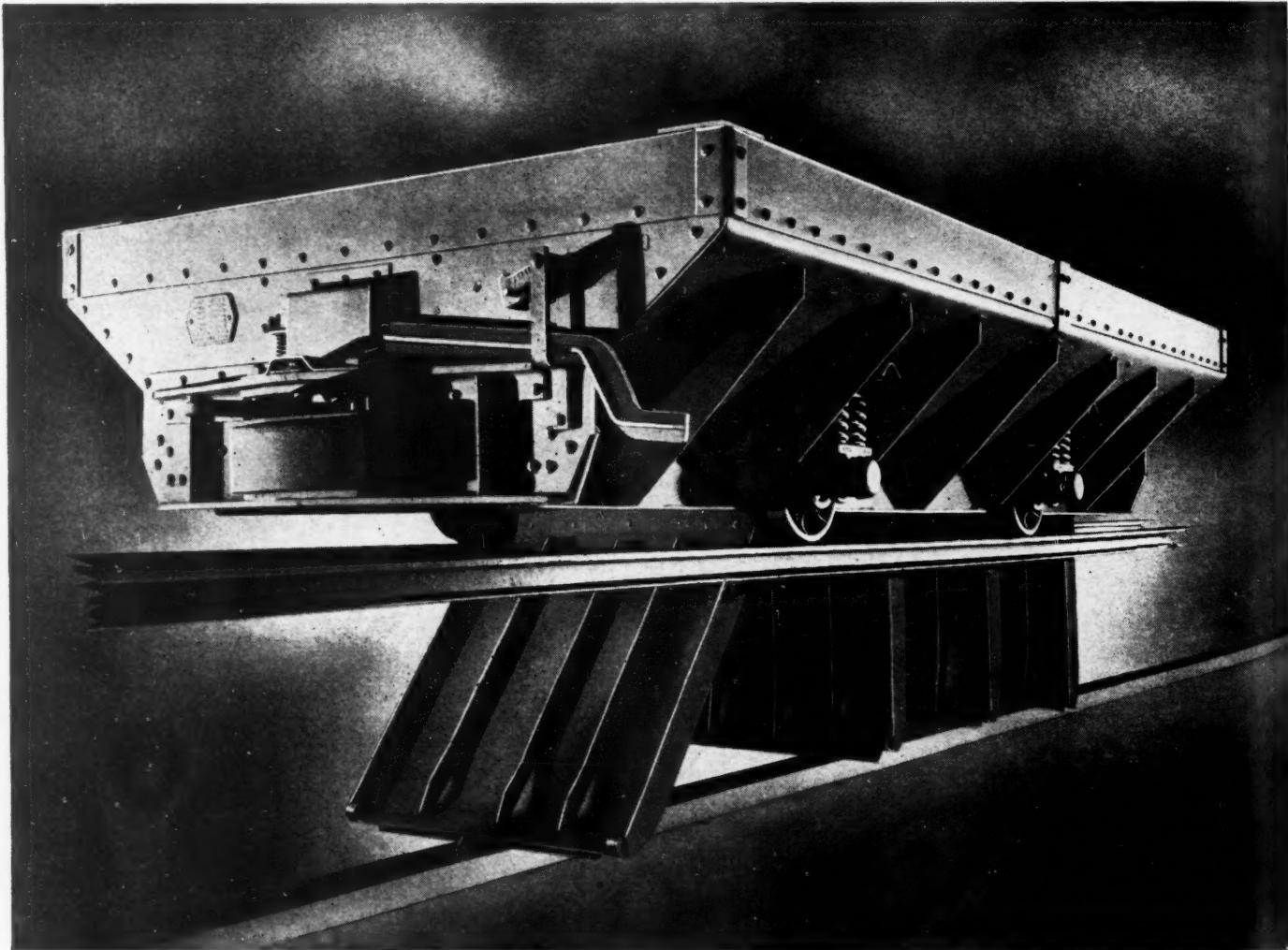
**Whether you need  
Large or Small Mine  
Cars, You DO Need  
S-D 1-2-3 "Automatics"  
NOW!**

Here is an S-D 1-2-3 "Automatic" that hauls about 12 tons of coal.

We know it is important for every mine to cut operating costs to rock bottom. We know also, how S-D 1-2-3 "Automatics" have saved thousands of dollars for other operators and they will do it for you.

All you need do is give us a chance to show you how a modern S-D 1-2-3 "Automatic" does the job. And, whether you need Twelve ton or One ton "Automatics", narrow or wide, short or long, you can have every new and modern feature, including our fool-proof, automatic Di-dapper method of dropping the doors.

Once you investigate, you'll find it will pay big dividends to junk obsolete cars and install these remarkable S-D 1-2-3 "Automatics".



*Sanford-Day Iron Works*

KNOXVILLE, TENNESSEE



This S-D 1-2-3 "Automatic" hauls about 13/4 tons of coal. It is a Di-dapper operated car. Note the absence of all unlatching mechanism on end of car.

## You Can Buy Or Rent S-D 1-2-3 "Automatics"

Whether you buy or rent, you'll save money. As a matter of fact, we know from experience that where cars are rented, the savings amount to more than the rentals.

If you can release 18 men for other work, as one operator did recently, big savings are bound to show up. When your savings alone can pay for all the cars in 6 months, as reported by another firm, you can't avoid increased profits.

Would you rent S-D "Automatics" at a rate which is less than one-tenth, per ton of

coal handled by the cars, then the savings, per ton of coal, effected by the use of the cars?

Such things are certainly worth considering these days and you can't go wrong by taking a little time to investigate.

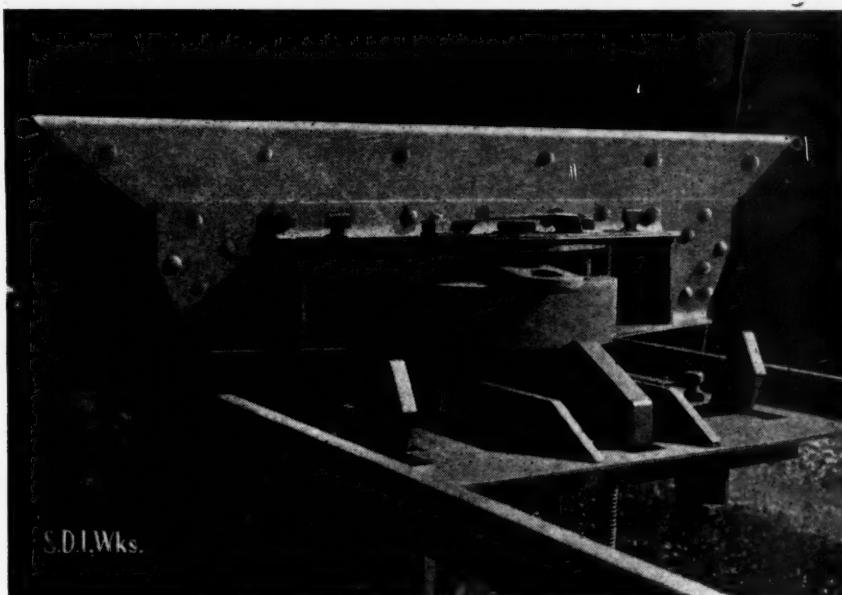
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American 25	American 14	American 3A
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		American 112

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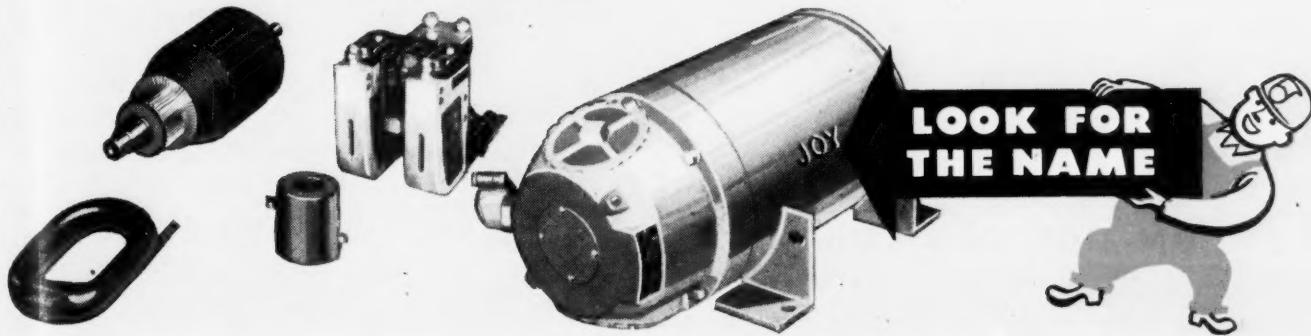
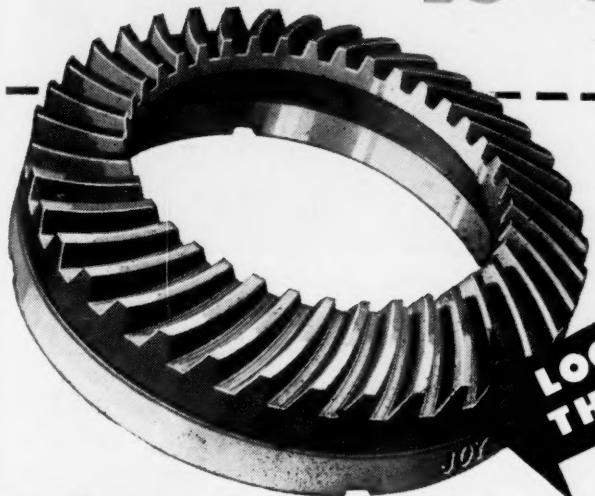
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# Coal Age

DEVOTED TO THE OPERATING, TECHNICAL AND BUSINESS PROBLEMS OF THE COAL-MINING INDUSTRY

Ivan A. Given, *Editor*

FEBRUARY, 1946

## Storm Ahead?

GOOD is the way a lot of things look for coal mining in the immediate future. Demand will hold for some time; the price situation permits a modest profit for the larger part of the industry, and faster progress is being made in improving plant, equipment and methods. Yet, a closer look shows that 1946 could be one of the most critical years in the history of the industry—critical because of competition and relations with consumers. Conditions are ripe for continued building on reawakened public confidence in coal and respect for its record, but they definitely are not so favorable that coal operators, coal miners and union leaders can take undue liberties with the user's pocketbook or with his patience in case of an extensive upheaval in the industry.

What could result in a substantial increase in prices, an extensive upheaval or both? The answer boils down to John L. Lewis. If he has a series of heavy demands and chooses to press them to the usual limit, the result can only be a higher price, an upheaval or both. Perhaps he will remain content for a time but his present inactivity certainly is not characteristic. Therefore, there is reason for surmising that he has something up his sleeve and will produce it when he feels the time is ripe—perhaps when the dust from other disputes has settled and he has the field to himself with the power to shut down industry by cutting off its coal supply. The sprag is ready to his hand in case he wants to use it to enforce any demands he may want to make.

Since it seems unlikely, even if desirable, that Lewis will long sit idly by while other unions grab off wage increases and other concessions, coal operators may soon again find themselves in the unhappy position of trying to decide if they can afford to trade a wage increase with a consequent cost and price increase for uninterrupted operation and release from certain other demands. Either way, the impact on the public might well be critical.

Right now and for some time to come, any new concessions in wages and hours would be bound to increase cost and force a price increase. Some point to the overtime now figuring in coal-miner earnings and coal prices as a target, among others, Lewis has in mind. If times were normal, overtime might provide some cushion for an increase or as an offset to downward readjustments that might be involved in a return to the regular working schedule, assuming that it was not more proper to pass

some of these savings along to the customer. With the present working force, however, satisfying demand requires continuance of overtime for at least several months and perhaps two or three years. An increase, either by taking an hour or so off the regular schedule and adding it to those subject to overtime or by increasing base rates, therefore would have to be accompanied by an increase in prices.

Considerably more could be said on this question of the effect of increased wage rates and changes in present standard hours per shift on prices. Until efficiency has been raised sufficiently to absorb it, however, a substantial wage raise or any other concession that would materially increase cost might find coal establishing new all-time price highs in 1947 if not in 1946. With competition and consumer relations what they are, this is no time to be establishing new price highs—or new records for the duration of stoppages. Perhaps time will prove these comments on the labor-relations outlook considerably wide of the mark, but this fact remains: coal now has a real opportunity to build on its record of service. If it is to take advantage of that opportunity, the utmost wisdom must be exercised in the conduct of relations between employer and employee—and union leaders are not exempt.

## Opportunity

RELATIONS between coal producers and consumers—actual and potential—are difficult to present in dramatic fashion. Nevertheless, they have a real effect on the profit picture. Also, they involve the outlook, capabilities and progressiveness of all representatives of the producer—not only his own salesmen but also the wholesalers and retailers responsible in large part for bridging the gap between mine and furnace. Since these representatives are practically the only contact the public has with the industry, how well they function largely determines public acceptance of the industry and its product. This is an old and fundamental principle but its application is not as universal as it might be. Consequently, the recent decision of the board of directors of the National Coal Association to set up a special committee to promote producer-dealer relations is one deserving the support of all producers. With competition what it is, nothing less than the best in understanding and cooperation should be tolerated.

# COAL MINING PLANS

Demand, competition, manpower, labor relations, government and public relations—what problems do they pose and what opportunities do they offer? Cost reduction, quality improvement and accident reduction—what are the prospects and how is coal cashing in on them? As a contribution to industry planning, Coal Age offers the following summary of probable future developments and how coal is moving to improve its service to the public.

PROOF of what free enterprise can accomplish—even under extreme difficulties—was no more apparent than in coal mining in 1945. The industry delivered the goods in spite of decreased manpower, strikes and other handicaps of war and reconversion. Its record should stand it in good stead in the future in which, along with real opportunities, it will have the job of redemonstrating its right to continue as a free enterprise by making progress in solving the problems that still face it.

Looking at that future, all signs point to a high level of production—much higher than the prewar average. That prospect eases but does not eliminate the need for higher efficiency and higher quality, in which modern mechanical mining and preparation are being called upon to carry the major share of the load. It also eases but does not eliminate the problem of competition and how to meet it through research and better merchandising; improving labor relations and promoting genuine cooperation be-

tween operator and miner for their mutual interest and the benefit of the consuming public; making mine operation safer and working and living conditions better; conducting operations to ward off governmental interference; and bringing to the public a better understanding of the industry, what it is doing and what it means to American life.

Some of the highlights of these and other phases of industry operation and what course future developments may take in the light of present knowledge are summarized in the following:

## Production

Bituminous production, in part affected by wildcat strikes, dropped 7.0 percent to a preliminary estimate of 576,000,000 tons in 1945, against the all-time high of 619,576,000 tons in 1944. Anthracite production decreased 14.3 percent from 63,701,000 tons in 1944 to 54,615,000 tons in 1945. The relatively greater decline in anthracite was a reflection not only of strikes and stoppages but also of the relatively greater manpower loss in the hard-coal region.

All the evidence points to continuation of anthracite production at 1945 levels or better through 1946. In other words, present demand, both here and in Canada, is not fully satisfied nor likely to be until the production rate is built up. Consequently, barring a major change in conditions, the indications are that anthracite output in 1946 will tend to be more than in 1945 rather than less.

Forecasters who have studied the bituminous picture see an output of at

## Five-Year Forecast of Bituminous Demand By Appalachian Coals, Inc.

	Thousands of Net Tons				
	1946	1947	1948	1949	1950
Electric power utilities.....	68,000	76,000	72,000	74,000	74,000
Byproduct coke ovens.....	80,000	89,000	85,000	87,000	87,000
Beehive coke ovens.....	3,000	3,300	3,100	3,200	3,200
Steel and rolling mills.....	10,000	11,000	10,500	10,800	10,800
Coal-gas retorts.....	2,000	2,200	2,100	2,000	2,000
Cement mills.....	6,000	6,700	6,400	6,600	6,600
Railroads <sup>a</sup> .....	110,000	115,000	110,000	105,000	100,000
Add. known consumption.....	2,000	2,500	2,000	2,400	2,400
Bunker fuel <sup>b</sup> .....	2,000	2,300	2,100	1,500	1,500
Other industrial uses <sup>c</sup> .....	110,000	122,000	116,800	115,000	115,000
Sub-total industrial.....	393,000	430,000	410,000	407,500	402,500
Retail Deliveries: <sup>d</sup>					
Residential.....	90,000	95,000	90,000	90,000	85,000
Commercial.....	20,000	25,000	20,000	20,000	15,000
TOTAL U. S. DEMAND....	503,000	550,000	520,000	517,500	502,500
Exports: <sup>e</sup>					
To Canada.....	18,000	20,000	19,000	17,500	17,500
To all others.....	14,000	10,000	5,000	5,000	5,000
GRAND TOTAL.....	535,000	580,000	544,000	540,000	525,000

<sup>a</sup> Adjusted account diesel competition. <sup>b</sup> 1949-1950 adjusted account declining export business. <sup>c</sup> Adjusted account increased use of electricity but partially offset by new uses. <sup>d</sup> 1948-1950 adjusted account inroads of competitive fuels and electric power. <sup>e</sup> Decline due to recovery of markets by subsidized shippers.

# SFOR THE FUTURE

least 525,000,000 tons in 1946, with a number putting the tonnage substantially higher unless the reconversion program bogs down and the country goes into a tailspin. In the first quarter, certainly, the need for rebuilding stockpiles, taking care of exports and supporting the generally heavy production rate expected should require output at the 1945 level or better. In this connection, it will be recalled that bituminous output rebounded to over 12,000,000 tons weekly practically with the news of V-J day and thus added a few million tons to the 1945 total that otherwise probably would not have been mined.

The forecast prepared by Appalachian Coals, Inc., and reproduced in the accompanying table, puts 1947 production at 580,000,000 tons in expectation that reconversion will be completed in 1946 ready for a real production race the following year. Satiation of pent-up

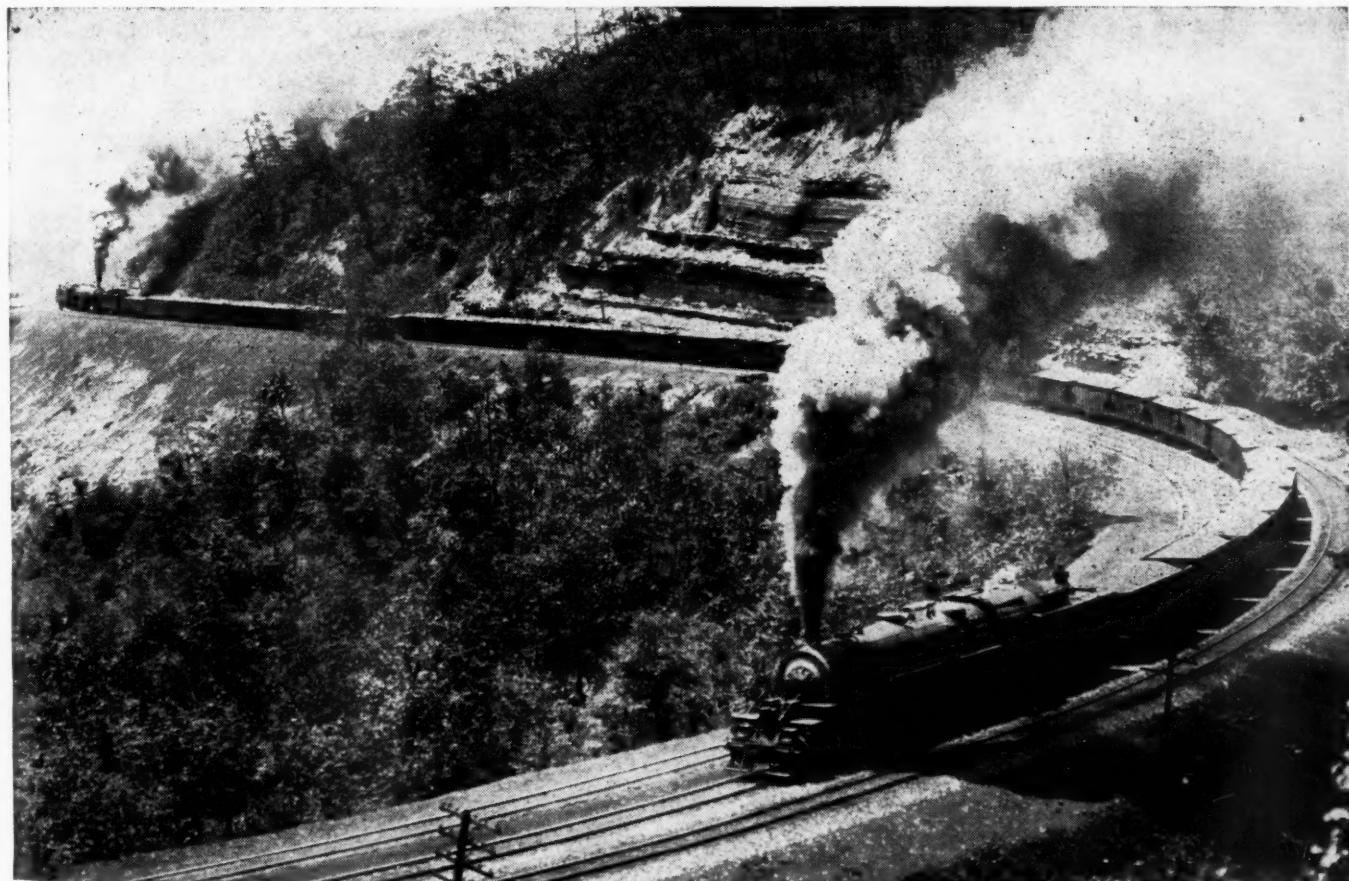
demand then will result, in A.C.I. opinion, in a natural recession to more nearly normal levels of around 525,000,000 tons by 1950, including adjustment for the effects of competition. In all years in the next five, the output is expected to be well above prewar levels.

## Manpower

Although less critical now than during the war years, manpower will continue to be a problem in coal mining for perhaps two years or more and especially in 1947 if the expected production level for that year is attained. The average age of the working force still is high, with all that that connotes in possible losses, and, so far, the industry is getting back only about 25 percent of its veterans and has not fared too well in obtaining other young men. The bituminous working force

in 1945 probably was several thousand less than the average of 393,347 in 1944. Anthracite also operated with fewer men than the 77,591 on the job in 1944.

Indications are that coal mining will have to expand recruiting and training to maintain a working force adequate in numbers and skill. Steps already have been taken by a number of anthracite producers to train and introduce new men directly into the mines. Also, a growing number of bituminous producers are sponsoring and cooperating in vocational guidance and training courses designed to interest high-school students in mining as a good livelihood and better prepare them to enter it. In many cases, these steps are being supplemented by adult recruiting and training courses conducted by individual companies and associations in several producing regions.



Competition remains one of coal's major problems, with oil's challenge in the railroad field as the outstanding example.

## Labor Relations

RELATIONS between coal operators and the United Mine Workers of America in 1946 still were the great enigma at the time this was written. Perhaps it might be put another way: the plans of John L. Lewis still were the big question mark. However, it was expected that something would happen because something always has. Whether that action would be along economic lines, the course generally followed by Lewis in the past, although with overtones of politics and jockeying for power, or whether along new lines and in accordance with new philosophies also was a matter for speculation.

Some five aspects of the U.M.W. situation are viewed as having possible major significance in the immediate future:

1. The key position of the coal industry in industrial activity and consequently the key position of the union.

2. Failure of the union to request contract reopening in 1945, when there was a significant change in government wage policy—or at least a change that would have served.

3. Reaffiliation of the miners with the American Federation of Labor, Jan. 25, perhaps signifying a further closing of the opposition ranks in preparation for a finish fight with the C.I.O.—probably on the issue of getting the federal government out of labor relations and contract settlement.

4. The foremen's strike of 1945. Did this forecast, some ask, a possible change in Lewis' philosophy of doing business?

5. The substantial percentage of overtime in miner earnings and coal prices as a result of wartime developments.

Since it is out of character for Lewis to let any opportunities slip by him, his inaction in this present period leads many to believe that he is waiting for a time when he may be in a better position, with the stage to himself. When would those conditions prevail? One answer is, after all other disagreements have been settled either by negotiation between industry and labor or by government seizure, legislation or fiat. If Lewis then stepped in, with his power to shut off the country's fuel supply, he might be in position to write his own ticket. Otherwise, if a long contest developed over his demands, 1946 might be largely or entirely lost from the standpoint of getting reconversion completed and production under way.

As stated, the preceding might be one conclusion that could be drawn

from Lewis' failure to reopen his contracts with coal operators. Coal supply is a key factor in industrial operations and transportation and consequently Lewis is in a key position. Therefore, until he has been heard from and has taken a stand or reached a settlement with the operators, the country cannot be said to have reached a point where it is ready to go ahead full steam on peacetime production.

When and if reopening takes place, the next question perhaps is whether Lewis will continue to proceed on a generally economic basis—that is, stick to wages and hours—or whether other factors will enter the picture. The 1945 foremen's strike might indicate, for example, that such other factors may be more prominent in the future. The grapevine has it, for example, that Lewis has the foremen "in the bag." That same grapevine also is authority for the statement that a royalty may be a No. 1 issue in the next negotiations, along with a guaranteed annual wage and other items not strictly related to wages and hours. The drive in these directions may be paralleled by a drive for a new coal act to make more certain the wherewithal to discharge these commitments.

### New Battle Ahead?

Reaffiliation with the A. F. of L., it also is held, may signify a departure from wage and hour matters into the field of using U.M.W. strength in a battle with the C.I.O. It is no secret that the A. F. of L. is chafing under the inroads of the C.I.O., especially since they have proceeded with the blessing of the federal government under the terms of an alliance no less binding because it is informal. It is no secret also that Lewis is anxious for a chance at the C.I.O. and that he has no love for the administration although that does not prevent him from taking advantage of its partiality to unions. It is logical, therefore, for the major opposition to the C.I.O. to try to get together with the key independent union—fortunately unaffiliated and furthermore an enemy of the new organization it helped form. Since both stand to gain by combining forces, that combination was practically inevitable and undoubtedly forecasts a real fight for dominance.

The issue on which battle will be joined probably will be the relation of the federal government to the union movement. It is no secret that the C.I.O. relies on the administration to bail it out of any difficulties it gets into and likewise that the federal government is toeing the mark—at the expense of opposition unions and to the

tune of more and more interference in labor relations and the affairs of business and the public. Lewis' forthright condemnation of the government course and his indorsement of what have hitherto been considered the principles of free enterprise at the labor-management conference last year might well have been the opening gun in the campaign against the C.I.O. and for less government in union affairs if not in public and business affairs. Certainly, there is reason to believe that in them the A. F. of L. found an issue and additional ground for getting together.

### Precedents Favor Demands

In the field of wages and hours in coal mining, all the necessary precedents for new demands already are in existence, although it is argued that since operators probably can offer full working time in 1946 and, therefore, that there is little prospect of a material decline in weekly earnings, there is no occasion to disturb materially present relationships. But since the federal government and its "fact-finding" boards are on record in favor of wage increases and since other industries are granting raises, there is no reason to believe that an attempt to apply the same principle to coal mining will find the government or its agencies in opposition, even though it might be some time before earnings begin to drop in coal mining. If nothing else is available they can always resort to such steps as comparing "straight-time hourly earnings" to the increase in cost of living of 33 percent since 1941 announced by the government, as well as to other figure-juggling beloved of government agencies and boards in search of a means of satisfying a wage demand.

The overtime pay situation in coal mining, according to some students of the problem, could furnish Lewis with considerable ammunition in a drive for an increase in rates or, if not, for the same weekly pay for reduced hours. Coal-mine overtime is accumulated each day as well as each week and aggregates a substantial proportion of the weekly earnings of the miner, as well as a substantial percentage of the price presently granted the industry. Thus, these students argue, Lewis could contend that elimination of overtime, which could be pictured as an immediate prospect, would permit operators to raise rates substantially without increasing their cost per ton. Or, they point out, he might contend that hours could be reduced substantially with no reduction in daily or weekly earnings of the miner. In fact, they consider it likely that hours of work may become the central issue in the negotiations, with the union goal a

six-hour day and 30-hour week, with, of course, overtime thereafter in each case.

To sum up, subject to the usual reservations in forecasting, the present period in operator-union relations very well may be only the calm before the storm. If so, coal men may find themselves contending shortly after, if not before, the first of April with a part or all of the following:

1. Demands for higher rates, shorter hours or both—almost certainly with the first.

2. A campaign for concessions on fronts other than those of strictly hours and wages, such as royalty payments, organization of foremen, a guaranteed annual wage and the like.

3. A drive to use the coal industry and coal miners as key weapons in a war to break the C.I.O. and make Lewis and the A.F. of L. supreme.

Over all, coal-mine management still has with it the problem of achieving better cooperation and mutual effort with employees and especially of arriving at a reduction or elimination of work stoppages. The problem is admittedly difficult, but a growing number of operators are tackling it by such methods as improving their operations to increase working time, improving working and living conditions, providing opportunities for better employee cooperation where such cooperation is right and proper, giving employees the facts about company and industry problems and opportunities and encouraging them to identify themselves with their company and their mine to the mutual advantage of all parties concerned, including the consumer.

## Government Relations

Like all other industries, coal mining must constantly remain on guard against the "Let's pass a law" philosophy that has flourished under the New Deal along with a continuing campaign to substitute government fiat for the processes of free enterprise. Some wartime controls have come or will be coming off. Scheduling of mining-equipment manufacture, for example, was abandoned the first of the year and SFAW has announced that it plans to wind up by the end of the present coal year. Industry operations, however, still are complicated by government wage and price regulations and the signs point to the bureaucrats hanging on if at all possible. In addition, the federal government shows few signs of ceasing to shovel out money. Consequently, additional tax relief may be slow in coming.

State and local authorities also are

## Highlights in the 1945 Coal Picture

Jan. 2—Work started at Bruceton, Pa., on synthetic liquid-fuel laboratory.

Jan. 12—Locomotive Development Committee announced.

April 1—Further steps taken to protect key men under 30 in coal and other vital war industries.

April 1—Bituminous wage agreement extended 30 days.

April 10—235 mines seized in seven States as a result of work stoppages.

April 11—New bituminous wage agreement signed; includes increases in portal payments, shift differentials and vacation payments variously estimated at \$1.02 to \$1.30 per day; WLB approves April 23.

April 30—OPA approves 16c. average increase in bituminous prices; forces absorption of, it states, 5c. per ton.

May 1—Anthracite stoppage taking place when Lewis refuses extension of agreement closes mines two weeks; all operations seized May 3 with no effect on stoppage.

May 7—Supreme Court upholds portal-to-portal pay; rehearing denied June 18.

May 8—V-E day.

May 19—New anthracite agreement carrying fringe increases of \$1.37½ per day signed; WLB approves June 2; mines returned June 22.

May 19—Anthracite prices raised 25c. to \$1 per ton.

July 1—Simplified priorities system goes into effect.

July 20—Shipment of 6,000,000 tons to Europe urged by Ickes; total later raised.

July 21—Production of mining equipment put on the urgent list.

Aug. 3—OPA announces bituminous price increases averaging 3.47c. per ton for 13 districts; District 16 given 7.53c. in separate order.

Aug. 14—Japs surrender; all manpower controls abolished by WMC.

Aug. 15—King George announces plans for nationalization of coal mining in Great Britain.

Aug. 31—Selective Service instructs local boards to give mines special consideration in the deferment of men.

Sept. 8—Federal Power Commission begins investigation of natural-gas industry and distribution in Kansas City; hearings still going on at the end of the year.

Sept. 12—SFAW lifts 80-percent rule in domestic deliveries.

Sept. 21—Following vote at Jones & Laughlin mines Sept. 20, strikes to force unionization of supervisors get under way, eventually involving 210,000 men and the loss of some 16,000,000 tons of output.

Sept. 27—Hearing on petition of United Clerical, Technical and Supervisory Employees' Union for organization of Jones & Laughlin supervisors begins before National Labor Relations Board at Pittsburgh; decision still to be handed down at the end of the year.

Sept. 14—Lewis and other U.M.W. officials urge anthracite miners to raise productivity and tonnage.

Oct. 15—Producers meet to reactivate Coal Producers' Committee for Smoke Abatement.

Oct. 17—Lewis calls off supervisory strike until a "more propitious" time.

Nov. 14—Plans announced for liquidation of SFAW by end of June, 1946; date later advanced to end of present coal year.

Nov. 25—Interior Department takes over Missouri Ordnance Works for demonstration synthetic liquid fuels plant.

Dec. 20—Bill to nationalize British coal mines offered in Parliament.

Dec. 29—Scheduling of manufacture and delivery of mining equipment ended with termination of Order L-269 (P-56 ended Sept. 30); producers and manufacturers given right to use "CC" rating only in cases of dire need.

making motions in the direction of stepping up legislative and executive campaigns directed at mining and built around such things as severance taxes, regulation of strip operation, stream pollution, regulation of operating practices and many others. A few of the suggestions, of course, are good, but many of them reflect tax hunger, open-handed spending and the ax-grinding ideas of vote seekers.

Government competition with industry and government favoritism for one industry over another continue as major problems for coal mining. Federal water-power projects and valley authorities, for example, seemingly have more lives

than the proverbial cat and the drive recently has picked up strength. All signs point to the fact that coal mining must be more alert and willing to work harder than ever to protect the interests of investors, employees and customers against unwise or partial governmental action.

## Public Relations

There is real reason to believe that coal mining came out of the war greatly improved in stature in the eyes of the public. This reflects not only its wartime record of meeting demands but also the care and money put into the

## Coal and Competition in 1945

Production	1944	1945*	Percent Increase or Decrease
Anthracite, tons	63,701,363	54,615,000	-14.3
Bituminous, tons	619,576,240	576,000,000	-7.0
Crude oil, bbl.	1,677,753,000	1,710,159,000	+1.9
Sales and Shipments:			
Natural gas, M. c. f.	2,156,897,000	2,148,925,000	-0.4
Manufactured and mixed gas, M. c. f.	476,342,000	491,339,000	+3.1
Stokers, Classes 1 and 2 (11 mos.)	27,472	105,509	+284.2
Oil burners (11 mos.)	69,528	144,185	+107.4
Railroad Fuel:			
Coal, tons (10 mos.)	102,614,247	95,901,670	-6.5
Liquid fuel, bbl. (10 mos.)	93,849,473	96,265,323	+2.6
Electric Utility Fuel:			
Coal, tons	82,310,000	77,030,000	-6.4
Oil, bbl.	20,870,000	19,420,000	-6.9
Natural gas, M. c. f.	359,777,000	336,040,000	-6.6

\* Estimates or preliminary figures. Sources of data: coal production, U. S. Bureau of Mines; gas sales, American Gas Association; stokers and oil burners, Bureau of Census; railroad fuel, Interstate Commerce Commission; utility fuel, Federal Power Commission.

public-relations program of both branches of the industry. Much remains to be done, however, especially locally, to supplement the industry-wide programs, since the tide has just started to turn and could be reversed by a slackening of effort coupled with a prolonged stoppage or stoppages in service or other setback. Understanding of how public relations works and what it means to the industry is resulting in additional support, either directly or indirectly, and as the program goes on, additional benefits confidently may be expected.

### Safety

Coal mining again marked up a major gain in accident reduction in 1945, as set forth in an analysis of results elsewhere in this issue. The future undoubtedly will see additional progress along with additional pressure from federal and State authorities. How great that government and State pressure will become will be reflected in how much determination to eliminate injuries and fatalities the industry itself shows. Coal, however, is accepting its responsibility and 1946 undoubtedly will witness a further cut in the accident rate, benefiting both operator and miner and improving coal's standing with the public.

### Competition

Nothing in the competitive picture is calculated to convince coal that it can rest on its oars. The federal government is pressing for additional hydro projects and oil is intensifying its campaigns in the home, on the railroads and elsewhere. "Natural-gas facilities were expanded during the year to meet increasing demands," according to one review. "New transmission lines from

Texas to Ohio, western Kansas to Michigan and Texas to California are in process of government review. Other projects have been approved for increasing deliveries to the Appalachian region and are contemplated for the Chicago area." In addition, "Big" and "Little Inch" may well wind up as natural-gas carriers and their use as such already is being advocated.

The competitive picture, however, is not without its bright side. Coal has gained a better insight into the competitive problem and better ability to cope with it. This is not to say that additional losses will not be incurred. In fact, they are frankly admitted in, for example, the railroad field pending completion of research now under way to develop a modern coal-powered locomotive. That work is going well and the indications are that the answer to the diesel is not too far in the future.

Research and new equipment also are paying off in many other fields of utilization. Great progress has been made in the development of more efficient and convenient equipment ranging all the way from stoves and space heaters to new automatic units such as the bin-fed "Anthratube" heater put on display in January. Additional progress will be made in the immediate future not only in convenience and efficiency but in reduction of smoke—growing in importance as a problem the industry must cope with. The rate of stoker sales achieved in 1945 and in prospect in 1946 is evidence that modern, convenient coal-burning equipment commands widespread and growing acceptance.

Beyond burning coal as coal lies conversion into gaseous or liquid forms and such other measures as heating service and community or district heating from

central coal-fired plants. All these approach the ultimate in convenience with reasonable cost. Logic therefore dictates further investigation and promotion and consequently interest and participation in these and other proposals for increasing consumer satisfaction are scheduled for a substantial increase in the years just ahead.

With increased emphasis on research to promote coal utilization will come a further heightening of quality. Plans for new preparation plants indicate a major increase in emphasis in that direction as well as in another vital direction—merchandising. If present indications prove out, the next two years will see more progress in merchandising—all the way from advertising to consumer service—than was achieved in the ten preceding the war. With good merchandising, good equipment and a forward-looking research program, plus high quality and reasonable cost, the road of competition will become less and less easy, particularly if union demands and strikes force up the price of its product and rob it of one of its major arguments—no interruption in service. The present tight situation in fuel oil, coupled with other national and international developments, might well be the harbinger of a change in the tide that has been running to petroleum, especially if coal is alert to its opportunities in the building boom to come.

### Deep Mining

Substitution of power for hand work and of higher-capacity equipment for smaller and obsolete units seems likely to go ahead at the fastest pace in history in the next two years or so. This reflects the coal industry's conviction that the best economic policy is a low production cost, making possible competitive prices, reasonable returns on investment and good wages for employees. In 1944, according to WPB figures, coal mines put into service 251 new locomotives, 17,000 mine cars, 555 cutting machines, 188 shuttle cars, 152 crawler trucks, 634 chain conveyors, 95 belt conveyors, 336 underground conveyors of other types, 318 loading machines and 1,554 electric drills. Available data indicate an equal or better year in 1945, while last-quarter figures forecast a major jump in installations in 1946, another increase in output per man-shift and a further rise in the percentage of deep-mined coal handled mechanically.

The spread in application of power to mining also was indicated by such things as power bugdusters for short-walls, hydraulic pole shifters for locomotives, power swinging for duckbills and special loading machines served by conveyors for thin coal. Those and

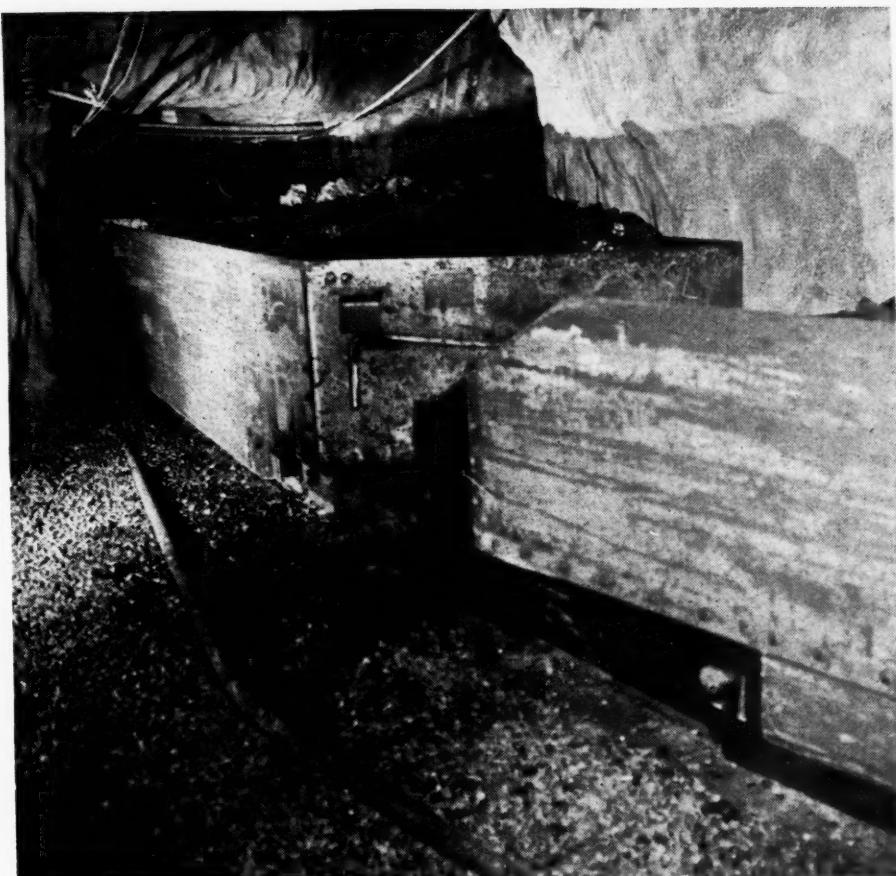
other developments were paralleled by increases in the power and capacity of loading units for thicker coal—all with the idea of making mining manpower more efficient. Wider use of loading machines on pitches also was forecast by activities in 1945. Rock loaders, including a number adapted from tunneling and metal mining, also were installed in increasing numbers for heading, tunnel and gangway work in coal mines.

Since the performance of loading equipment depends, in the long run, on how well auxiliary activities are carried out, the future will bring much greater stress on new equipment for face preparation, haulage and all other activities entering into final loading results. Present study of mining plans may be expected, therefore, to emphasize faster haulage and a greater tonnage per fall through such things as wider places and deeper cuts.

Additional mounted cutters will be installed because of their inherently higher capacity and will be paralleled by greater use of higher-capacity short-walls with controls for greater ease of operation. Length of cutter bars will be increased still more—up to 12 ft. or longer, in the opinion of many mining men and designers. New materials, new designs and new treatments forecast a major advance in bit performance, saving additional power and labor. With improved drilling equipment, coal-breaking mediums and shooting practices, face preparation will go much farther toward giving loading men and loading machines a better chance.

Mining and loading machines still are the object of considerable thinking and study both in the industry and among designers, while the Bureau of Mines is making arrangements for a test of the German "coal planer." Opinion at the moment is divided on the practicability of a mining and loading machine but since it is the next logical step there is reason to believe that the problems eventually will be worked out.

Pending new types of equipment, a major problem still facing the mining industry is getting more out of present equipment. Haulage is a major key. Productions per machine and per man substantially higher than the average forecast greatly increased activity in the use of conveyors (room, butt-entry and main-line), big mine cars and big shuttle cars, including types for operation where close timbering is required. Development of additional transfer units reflects growing use of shuttle cars with belts. All indications point to as much activity in improving haulage in these and other respects as in any other phase of mining in the next two or three years. The improvements also will include new locomotives and bet-



**Increased capacity and modern design for higher efficiency, as exemplified in these mine cars, are the keynotes in future mine operation.**

ter track for room, secondary and main-line haulage. A new locomotive with two-speed motor and control equipment to better suit it to serving loading machines and handling relay haulage is one item in the list. New types of portable and quickly installable switches, plus pre-engineered track work for room service, are others.

New belt constructions, including steel-cable types, are expected to give added impetus to the use of belts for main-line and slope haulage. Since length may be greatly increased, reducing the number of drives and transfer points, the advantages of belt haulage are increased on the level as well as in slopes. Shafts, however, are not ruled out, and new sinking methods promise lower cost in their construction. This, plus developments in drilling large holes, will make it more possible to expand the number of shafts and boreholes for ventilation, travel reduction and other purposes at mining operations.

Ventilation, incidentally, is due for much greater attention from the standpoints of installation of more efficient fans, reduction of resistance and leakage, better splitting and more positive means of directing air to the working face. Drilling—vertically, horizontally

and at an angle—is expected to find much wider use in mine drainage, along with such other items as more efficient pumping units with automatic controls, ditching, tunneling and wider use of modern corrosion-resistant materials.

In hoisting, also, the increased capacity of power-distribution systems and their enhanced ability to absorb high starting peaks have made it possible to utilize bigger induction motors, thus obviating the necessity for the higher investment and energy consumption of the Ward Leonard power and control system. Excitation-amplification controls are being installed on a growing list of mine hoists, including, it is reported, the first fast coal-mine hoist to be so equipped. That hoist handles  $4\frac{1}{2}$  tons of coal per trip over a distance of 487 ft. and is rated at 167 trips per hour.

More machinery means more power. Activity in 1945 indicates that both a.c. and d.c. service is scheduled for major improvements. More rectifier substations are being made with power savings and more reliable service as the major objectives, whereas earlier installations practically all were for new mines or as additions to existing equipment. Capacity has been increased to 600 kw.

at 600 volts. Sealed-tube rectifiers now unquestionably are preferred.

For mines operating on a.c., the trend is toward portable self-contained substations employing dry-type transformers or transformers filled with non-inflammable liquids. As stated, the majority of the purchases are concentrated on complete units in which the transformers and control apparatus make up a complete coordinated outfit. One such outfit is only 42 in. high. Electrical controls for conveyor mines now feature a variety of sequences and protective arrangements for both men and equipment for all types of installations. For belts in particular, jogging controls for safer operation in reverse for supply handling and dynamic braking for quick and accurate stops in the same service were new developments. An electric eye for stopping belts in transporting men has been installed by one company to prevent men from being carried over the discharge head. More knowledge of the hazards due to arcing and burning of trailing cables is resulting in prohibition of coiling, greater use of sectionalized cables and the installation of circuit breakers or junction boxes in feed lines.

More shops, new materials, new tools and closer inspection, overhaul and preventive repairs featured maintenance developments in 1945, along with greater use of welding and metallizing and the adaptation of the hidden-arc process to rebuilding for doubled speed, denser weld deposits and reduction of loss through electrode spatter. Rail welding also was improved during the year, with one company conducting extensive experiments to arrive finally at back-up clips under the head to insure a good weld at the bottom of the vee and make a joint practically as strong as solid rail (November, 1945, Coal Age, p. 124).

Handling supplies and men in trackless mines received greatly expanded study in 1945, indicating that the future will bring greater use of special supply tracks and equipment, more taking of top or bottom to facilitate access to working sections and greater use of hand or powered trucks for supply handling and delivery. A parallel development was increased use of special man-trip cars providing greater safety and facilitating man-trip operation.

Air and oil-hydraulic control, actuating and power-transmitting mechan-

isms continued to supplant manual, positive-mechanical and certain magnetic equipment as typified by (1) mine locomotives with hydraulic or air brakes, (2) locomotives and hoists with pneumo-electric contactors, (3) additional cutting machines with oil-hydraulic controls, (4) water-hydraulic transfer stations underground and (5) oil-hydraulic couplings on tipple and coal-handling equipment.

## Stripping

Heavier overburden with more hard material is being met in strip mining by higher-capacity equipment with more reach. Wartime developments in this branch of mining were marked by a major expansion into new fields, notably in the East and South. Although a large part of this new activity is based on outcrop operation and consequently will contract when the present market situation eases, increasing use of big equipment by concerns experienced in stripping forecast a relatively high level of activity in this area for some time to come. Strippers are now having to contend, however, with increased agitation for restriction of their activities through



To meet the problems of deeper overburden, strip operators are using bigger units with longer reaches and are adopting special equipment, such as this pilot wheel excavator, for reducing thickness ahead of shovels and making possible the spoiling of the extra material.

legislation and also with increased efficiency at deep operations tending to narrow the gap in output per man-shift and cost.

The big dragline moved farther into the stripping picture in 1945 in both the anthracite and bituminous regions. Activity and interest in these and other units forecast a major increase in installations of new and larger equipment in the years just ahead, including units designed to handle the deeper overburden now prevailing as a result of the decrease in reserves with relatively thin cover. The present 25-cu.yd. dragline used in both the anthracite and bituminous industries undoubtedly will be eclipsed by larger units in the relatively near future, according to present indications. Paralleling this is an increase in dipper size for shovels, which last year went up to 40 cu.yd. Some thought has been given to machines with 50-cu.yd. dippers and interest undoubtedly will be translated into actual installations. Consideration also is being given to long-range-front shovels suitable for the deeper overburdens, which will permit operation without assistance from auxiliary equipment. Meantime, tandem operation and the use of special equipment such as the pilot-wheel excavator is scheduled for an increase.

With thicker, harder overburden comes a greater problem in breaking it up for stripping. Consequently, the industry is installing bigger, faster drills of both the horizontal and vertical types, many of the horizontal with adjustments that enable them to drill at various levels up the bank to get holes where they do the most good. Hole sizes are increasing and increasing attention is being paid to positioning it.

Larger haulage equipment is a definite trend in stripping, including both trucks and tractor-semi-trailer equipment, with the diesel engine gaining ground. Where rail haulage still constitutes part of the cycle, diesel and diesel-electric motive power also is extending its gains. Better roads for truck equipment also is a continuing trend in strip mining.

Controls for stripping and loading equipment are playing a larger and larger part in results from both the production and maintenance standpoints. Excitation-amplification equipment in fact, is being extended to loading shovels and other smaller units. With improvement in controls and other characteristics of stripping and loading equipment, operators are looking more and more into the merits of auxiliaries, such as tractors and bulldozers, scrapers and small draglines and special units to assist the stripping and loading units and save them time for their stripping and loading activities. Scrapers and

## New Anthracite Preparation Facilities in 1945\*

Coal Company	Plant Location	Capacity, Net Tons of Feed per Hour	Preparation Equipment
Ace Coal Co.	Blakely, Pa.	12	Menzies <sup>1</sup>
Adelphi Coal Mining Co.	Avoca, Pa. (6)	48	Deister Concentrator <sup>2</sup>
Allentown Portland Cement Co.	Evansville, Pa. (2)	20	Deister Machine <sup>3</sup>
Bernice Coal Co.	Bernice, Pa.	12	Deister Concentrator <sup>4</sup>
Blackwood Coal Co.	Minersville, Pa.	300	Chance <sup>5</sup>
Coal Rain Coal Co.	Minersville, Pa. (4)	190	Wilmot <sup>6</sup>
Colitz Coal Co.	Junedale, Pa. (2)	12	Menzies <sup>1</sup>
D. & F. Coal Co.	Pottsville, Pa. (2)	16	Deister Concentrator <sup>4</sup>
Ecco Mfg. Co.	Minersville, Pa.	75	Wilmot <sup>6</sup>
Gateway Coal Co.	Pine Grove, Pa. (3)	24	Deister Concentrator <sup>2</sup>
Haddock Mining Co.	Forest City, Pa. (6)	48	Deister Concentrator <sup>4</sup>
Hall Coal Co.	Beaver Meadows, Pa. (2)	16	Deister Concentrator <sup>4</sup>
Hillside Coal Co.	Sunbury, Pa.	10	Deister Concentrator <sup>4</sup>
Hoffman, Leo	Tamaqua, Pa.	10	Deister Concentrator <sup>4</sup>
Hudson Coal Co.	Bloomsburg, Pa.	10	Deister Concentrator <sup>4</sup>
Hydrotated Anthracite Fuel Co.	Scranton, Pa.	65	Wilmot <sup>6</sup>
Jeddo-Highland Coal Co.	Milnesville, Pa.	50	Wilmot <sup>6</sup>
Joliett Coal Co.	Jeddo, Pa.	75	Wilmot <sup>6</sup>
Lower Region Coal Co.	Good Springs, Pa. (4)	50	Deister Concentrator <sup>4</sup>
Millersville Coal Co.	Tremont, Pa. (2)	40	Wilmot <sup>6</sup>
Moosic Mountain Coal Co.	Shamokin, Pa.	20	Wilmot <sup>6</sup>
Morea-New Boston Breaker Corp.	Millersville, Pa. (2)	44	Menzies <sup>1</sup>
Morrellville Coal Co.	Jessup, Pa.	200	Chances <sup>5</sup>
Nay Aug Coal Co.	Morea, Pa. (2)	150	Wilmot <sup>6</sup>
Oak Ridge Coal Corp.	Fern Glen, Pa.	8	Deister Concentrator <sup>4</sup>
Otto Collieries Co.	Scranton, Pa. (8)	65	Deister Concentrator <sup>2</sup>
Paramount Coal Co.	Raven Run, Pa. (8)	464	Menzies <sup>1</sup>
Philadelphia & Reading Coal & Iron Co.	Ashland, Pa. (5)	220	Wilmot <sup>6</sup>
Rosini Bros.	Archbald, Pa.	40	Menzies <sup>1</sup>
Russell Mining Co.	Locust Summit, Pa. (4)	270	Wilmot <sup>6</sup>
St. Clair Coal Co.	St. Nicholas, Pa. (2)	24	Deister Machine <sup>3</sup>
Steam Coal, Inc.	Minersville, Pa. (9)	75	Deister Machine <sup>3</sup>
Steele Coal Co., T. F.	Shamokin, Pa.	20	Wilmot <sup>6</sup>
Stevens Coal Co.	Moosic, Pa. (2)	12	Menzies <sup>1</sup>
Tunnel Ridge Coal Co.	St. Clair, Pa.	65	Wilmot <sup>6</sup>
Tuscarora Stripping & Mining Co.	Shamokin, Pa.	20	Wilmot <sup>6</sup>
Valley View Coal Co.	Junedale, Pa. (2)	40	Deister Concentrator <sup>4</sup>
Valley Forge Cement Co.	Tremont, Pa.	14	Deister Concentrator <sup>4</sup>
	Silver Brook, Pa.	50	Wilmot <sup>6</sup>
	Tuscarora, Pa.	50	Wilmot <sup>6</sup>
	Pittston, Pa. (5)	12	Deister Concentrator <sup>4</sup>
	W. Conshohocken, Pa. (2)	40	Deister Concentrator <sup>2</sup>
		20	Deister Machine <sup>3</sup>

\* Includes contracts for installation of preparation equipment in existing structures. Where more than one unit of preparation equipment was installed, the number appears in parentheses after the plant address.

<sup>1</sup> Menzies cone-separator coal-cleaning equipment. <sup>2</sup> SuperDuty Diagonal-Deck No. 7 coal-washing tables with Concenco revolving feed distributor. <sup>3</sup> Deister No. 16 Plat-O coal-washing table or tables. <sup>4</sup> SuperDuty Diagonal-Deck No. 7 coal-washing table or tables. <sup>5</sup> Chance-cone coal-cleaning equipment.

<sup>6</sup> Wilmot Hydrotator coal-washing equipment. <sup>7</sup> SuperDuty Diagonal-Deck coal-washing tables, Leahy NO-Blind vibrating screen and Concenco revolving feed distributor. <sup>8</sup> Simplex jig or jigs.

small draglines also are being increasingly employed—with overburden haulage in the anthracite region—for stripping, especially in outcrop areas.

Unit substations are more and more the choice of strip operators using electric power. Built as self-contained units with all controls and auxiliaries, these stations offer modern facilities with added convenience in setting up, wiring and moving. Ground-protective equipment bids fair to become universal in stripping, along with improved switchhouses and other field equipment. Capacitors and other special equipment for power-factor regulation and voltage stabilization also are scheduled for additional gains in strip mining.

## Preparation

With coal mining again moving into a period when the advantage will tend to lie with the buyer, interest in preparation undoubtedly will be reflected in a major increase in the rate

of installation of new facilities. All evidence points to the fact that equipment installed in 1945 will equal or exceed the total in 1944, while the increase in contracts in the last quarter presages a major rise in contracts in 1946, 47 and 48.

Mechanical cleaning bulk larger and larger in installations being contracted for today. In addition to equipment for the regular range of sizes, a further gain in installations for sizes up to 8 in. was marked up in 1945, while units put in service for individual sizes such as stove, nut and slack again constituted a large share of the total. Beneficiation of the buckwheats through mechanical cleaning was again marked by numerous table, classifier and other washer installations in the anthracite region, with such equipment representing the lion's share of the contracts. In addition, several installations and plants were built for special work on buckwheat and also for silt recovery and reduction of stream pollution. Bituminous also

## New Bituminous Preparation Facilities in 1945\*

Coal Company	Plant Location	Capacity, Net Tons of Feed per Hour	Preparation Equipment
Allegheny River Mining Co.	Cadogan, Pa.	50	Roberts & Schaefer <sup>1</sup>
Albuquerque & Cerrillos Coal Co.	Madrid, N. M.	50	Jeffrey <sup>2</sup>
Bethlehem Steel Co.	Johnstown, Pa.	4	Link-Belt <sup>3</sup>
Blackfoot Coal & Land Corp.	Oakland City, Ind. (4)	500	McNally-Pittsburg <sup>4</sup>
Borderland Collieries	Borderland, W. Va.	175	Jeffrey <sup>2</sup>
Brophy Coal Co.	Bear Creek, Mont.	50	McNally-Pittsburg <sup>20</sup>
Buckeye Coal & Coke Co.	Stephenson, W. Va. (2)	80	Kanawha <sup>5</sup>
Buckeye Coal & Limestone Co.	Pedro, Ohio	75	Morrow
Canyon Coal & Coke Co.	Canyon, W. Va.	200	Jeffrey
		600	Jeffrey <sup>2</sup>
Chicago, Wilmington & Franklin Coal Co.	West Frankfort, Ill.	410	Roberts & Schaefer <sup>2</sup>
Clinchfield Coal Corp.	Dante, Va.	50	Allen & Garcia <sup>6</sup>
Crescent Coal Co.	Central City, Ky.	400	Roberts & Schaefer <sup>7</sup>
D. J. B. Collieries, Inc.	Flannery, Ky.	200	Jeffrey <sup>8</sup>
Defiance Coal Co.	Mentmore, N. M.	75	Roberts & Schaefer
Diamond Elkhorn Coal Co.	Bosco, Ky.	120	Deister Machine <sup>9</sup>
Duncan Coal Co., W. G.	Luzerne, Ky.	250	Link-Belt <sup>10</sup>
Elk Lick Coal Co.	Jerryville, W. Va.	300	Roberts & Schaefer <sup>7</sup>
Fourseam Coal Corp.	Fourseam, Ky.	80	Fairmont <sup>11</sup>
Freeman Coal Mining Corp.	Herrin, Ill.	400	Kanawha <sup>6</sup>
Gay Mining Co.	Timbar, W. Va.	185	Roberts & Schaefer <sup>12</sup>
Guyan Eagle Coal Co.	Amherstdale, W. Va.	310	Fairmont <sup>11</sup>
Hickory Grove Coal Mining Corp.	Latta, Ind.	40	Link-Belt
Hutchinson Coal Co.	MacBeth, W. Va.	125	Cent. & Mech. Ind. <sup>13</sup>
Ingle Coal Corp.	McElvile, W. Va.	250	Fairmont <sup>11</sup>
Jefferson Coal Co.	Elberfield, Ind.	135	Roberts & Schaefer <sup>14</sup>
Keystone Coal Co.	Fernwood, Ohio	400	Jeffrey
Knott Coal Corp., Inc.	Denver, Colo.	75	Jeffrey <sup>15</sup>
Knox Consolidated Coal Corp.	Anco, Ky. (2)	165	Roberts & Schaefer <sup>7</sup>
	Bruceville, Ind.	400	Link-Belt <sup>16</sup>
	(Everettville, W. Va.)	120	Kanawha <sup>6</sup>
	Kopperston, W. Va.	36	Link-Belt <sup>17</sup>
Koppers Coal Division	Kopperston, W. Va.	38	Roberts & Schaefer <sup>17</sup>
	(Kopperston, W. Va.)	40	Roberts & Schaefer <sup>18</sup>
Leccony Smokeless Fuel Co.	Bosoco, W. Va.	175	Kanawha <sup>6</sup>
Leckie Collieries Co.	Alex, Ky.	150	Jeffrey
Lillybrook Coal Co.	Killarney, W. Va.	80	Jeffrey <sup>18</sup>
Lion Coal Corp.	Wattis, Utah	50	Roberts & Schaefer <sup>19</sup>
Logan County Coal Corp.	Amherstdale, W. Va.	300	Link-Belt
Majestic Collieries Co.	Majestic, Ky.	125	McNally-Pittsburg <sup>20</sup>
Mead Coal Co., C. H.:	East Gulf, W. Va.	250	Roberts & Schaefer <sup>14</sup>
Moffat Coal Co.	Sparta, Ill.	40	Kanawha <sup>6</sup>
Morrisdale Coal Mining Co.	Morrisdale, Pa.	250	Jeffrey <sup>19</sup>
Montana Coal & Iron Co.	Bearcreek, Mont.	60	Link-Belt
Mountain Fuel Co.	Brownonton, W. Va.	250	Fairmont
Muskingum Coal Co.	Zanesville, Ohio	365	Jeffrey <sup>20</sup>
New Alma Coal Co.	Misco, Ohio	60	Cent. & Mech. Ind. <sup>13</sup>
New Block Coal Co.	McCarr, Ky.	250	Jeffrey
New River Co.	Centerville, Iowa	30	Deister Machine <sup>9</sup>
Northwestern Improvement Co.	Mt. Hope, W. Va.	230	Kanawha <sup>6</sup>
Pacific Coal Co.	Roslyn, Wash. (3)	24	Jeffrey <sup>21</sup>
Pau Mau Coal Co.	Roslyn, Wash.	40	Deister Concentrator <sup>19</sup>
Pekin Mining Co.	Black Diamond, Wash.	50	Cent. & Mech. Ind. <sup>13</sup>
Peterson Coal Co.	Madisonville, Ky. (5)	400	McNally-Pittsburg <sup>20</sup>
Pittsburgh Coal Co.	Pekin, Ill. (2)	35	McNally-Pittsburg <sup>4</sup>
Powhatan Mining Co.	Deerfield, Ohio	150	Deister Concentrator <sup>19</sup>
Rail & River Coal Co.	Champion, Pa.	200	Jeffrey <sup>22</sup>
Raleigh-Wyoming Mining Co.	Powhatan Point, Ohio	400	Jeffrey <sup>23</sup>
Red Diamond Coal Mining Co.	Bellaire, Ohio	60	Link-Belt <sup>11</sup>
Red Jacket Coal Corp.	Edwight, W. Va. (2)	300	McNally-Pittsburg <sup>20</sup>
	Leeds, Ala. (2)	18	Deister Machine <sup>9</sup>
	Red Jacket, W. Va.	250	Morrow
Red Parrot Coal Co.	Prenter, W. Va.	350	Kanawha <sup>6</sup>
Rochester & Pittsburgh Coal Co.	Waterman, Pa.	225	Jeffrey <sup>24</sup>
Russell Fork Coal Co.	Pikeville, Ky.	450	Roberts & Schaefer <sup>25</sup>
Slab Fork Coal Co.	Slab Fork, W. Va.	300	Heyl & Patterson <sup>11</sup>
Sycamore Coal Co.	Cinderella, W. Va.	300	Fairmont <sup>11</sup>
Truax-Traer Coal Co.	Hazen, N. D.	100	Robins
	Kayford, W. Va. (3)	400	Kanawha
United Electric Coal Cos.	Cuba, Ill. (6)	800	Kanawha
U. S. Coal & Coke Co.	Duquoin, Ill.	250	Link-Belt
West Gulf Coal Co.	Gary, W. Va.	2,000	McNally-Pittsburg <sup>4</sup>
	Maben, W. Va.	85	McNally-Pittsburg <sup>20</sup>
West Kentucky Coal Co.	Madisonville, Ky.	500	McNally-Pittsburg <sup>10</sup>
	Earlington, Ky.	300	Roberts & Schaefer <sup>7</sup>
West Virginia Coal & Transportation Co.	Hecla Mine, Ky.	400	McNally-Pittsburg <sup>20</sup>
Westmoreland Mining Co.	Mason City, W. Va.	60	Roberts & Schaefer <sup>7</sup>
Winding Gulf Collieries	Blairsville, Pa.	200	Jeffrey <sup>27</sup>
	White Station, Pa.	60	Cent. & Mech. Ind. <sup>13</sup>
Windsor Power House Coal Co.	Riffe Branch, W. Va.	250	Kanawha <sup>6</sup>
Youghiogheny & Ohio Coal Co.	Beech Bottom, W. Va.	600	Jeffrey <sup>28</sup>
	Van, W. Va.	330	Roberts & Schaefer
			Fairmont <sup>11</sup>

made further progress along similar lines, and more is expected in the future.

Increasing recovery in preparation occupied a greater share of preparation thought in 1945 and all signs point to this becoming an even greater factor in operations in the future not only in fines and slurry but in re-treatment of refuse and washing of mine rock to recover coal values.

With the increase in washing in the bituminous industry, drying has become a greater and greater problem. Consequently, Bituminous Coal Research has adopted this as one of its projects coupled with a study of freezeproofing materials and methods. As a result, improvements along these lines are expected in the immediate future, as well as in dustproofing.

Combination plants or air-cleaning facilities for certain sizes, usually slack or nut and slack, were other methods used by a number of operators to avoid the problem of water on fine coal. In one case, a pilot plant was built especially for experimentation with new methods of dry cleaning small coal. It included a 450-ton storage bin, drying facilities for the 0x3/8-in. coal treated, a standard air cleaner and electrostatic units for 10- or 14-mesh x 0. In washing, the new dense-media process was represented by a contract for a plant with a capacity of 200 tons per hour to re-treat middlings that otherwise would be recirculated to launder washers.

\* Includes additions and installations of new preparation equipment in existing structures. Where information indicated the number, when more than one preparation unit was installed, that number appears in parenthesis after the plant address.

<sup>1</sup> Hydrotator coal-washing equipment. <sup>2</sup> Jeffrey diaphragm washing equipment alone or included in the installation. <sup>3</sup> Link-Belt Multi-Louvre dryer. <sup>4</sup> Including McNally-Norton automatic washers and McNally-Carpenter centrifugal dryers. <sup>5</sup> Kanawha-Belknap chloride washer or washers.

<sup>6</sup> Including Jeffrey Baum-jig and Stump Air-Flow cleaning equipment; Allen & Garcia, engineers and prime contractors. <sup>7</sup> Hydro-separator washing equipment. <sup>8</sup> Jeffrey Baum-jig washing equipment. <sup>9</sup> Plat-O vibrating screen equipment and auxiliaries. <sup>10</sup> Link-Belt air-pulsated washbox (100 t.p.h.) and Link-Belt Multi-Louvre dryer (20 t.p.h.).

<sup>11</sup> Chance-cone washing equipment alone or included in installation. <sup>12</sup> Including Hydro-separator and Stump Air-Flow cleaners. <sup>13</sup> C.M.I. continuous centrifugal dryers. <sup>14</sup> Stump Air-Flow cleaning equipment. <sup>15</sup> Unit washer.

<sup>16</sup> Including Link-Belt air-pulsated washbox or boxes. <sup>17</sup> Remodeling and additions to bring capacity up to 750 t.p.h., with future capacity provided for 1,075 t.p.h. <sup>18</sup> Pilot plant with Stump Air-Flow cleaner for 0x3/8 and Ritter electrostatic equipment for 10- or 14-mesh. <sup>19</sup> SuperDuty Diagonal-Deck No. 7 coal-washing tables with Conenco revolving feed distributor at Roslyn. <sup>20</sup> McNally-Norton automatic washing equipment alone or as part of complete preparation plants.

<sup>21</sup> Link-Belt dense-media separator for middlings. <sup>22</sup> Deister Plat-O coal-washing tables. <sup>23</sup> Including Jeffrey Baum-jig and Stump Air-Flow cleaning equipment. <sup>24</sup> Including McNally-Norton automatic washers and McNally-Vissac down-draft thermal dryers. <sup>25</sup> Including Hydro-separator and Hydrotator coal-washing equipment with two C.M.I. continuous centrifugal dryers with a capacity of 75 t.p.h. <sup>26</sup> Including McNally-Norton and McNally-Rheo washing equipment and auxiliaries. <sup>27</sup> Washing plant.

# COAL'S SAFETY RECORD

## Best in History of the Industry in 1945

Tentative Fatality Rate 1.72 per Million Tons in 1945 Against 1.91 in 1944—Lowest in the History of the Industry—Greatest Progress Made in Major Disasters, Falls of Roof and Coal, and Electricity

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THE COAL INDUSTRY'S accident record in 1945, according to available data, was the best in its history. It is estimated that 1,086 men were killed at work at bituminous-coal, anthracite and lignite mines in the United States during the year—a total well below the number of fatalities in coal mines in any year since 1939. Reflecting the relatively high production during 1945, estimated at 630,615,000 net tons, the fatality rate was 1.72 per million tons, a reduction of 10 percent from 1.91 per million tons in 1944.

The 1945 fatality rate was the lowest of any year in a continuous series of annual statistics on coal-mine injuries extending back to the early 1870s. A pertinent comparison, of which coal operators, labor and anyone else concerned with coal-mine safety may well be proud, is that the rate of 1.72 in 1945 was less than half that of 3.80 per million tons in 1918—a war year with conditions of pressure and stress somewhat similar to those in 1945.

The number of fatal injuries in coal mines has decreased each year since 1942, when 1,471 men lost their lives. If the fatality rate of 2.30 per million tons prevailing in 1942 had continued through 1943, 1944 and 1945, 680 more men would have been killed—50 in 1943, 266 in 1944 and 364 in 1945.

The 1945 safety record is even more remarkable when the difficulties attending such an achievement are analyzed. Demand during the first part of the year was well beyond the capacity of the industry, which was limited principally by the supply of labor. There was a steady decline in the average number of men working at coal mines each month in 1945 through August and only a slight uptrend in the remaining months of the year.

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Induction of the younger men into the armed forces had raised the median age of workers at bituminous operations from 41.5 on June 1, 1944, to 42.3 on Aug. 1, 1945, and at anthracite mines from 44.3 to 45.0 between the same dates. Moreover, new equipment and replacement parts were difficult to obtain during most of the year. Since these and other factors made achievement of safe practices and conditions more difficult, the substantial improvement in the accident record is an outstanding feature of coal-mining operations in 1945.

It is estimated that 947 workers lost their lives in accidents in bituminous-coal and lignite mines in 1945. Based upon the preliminary production figure of 576,000,000 tons, fatal injuries occurred at a rate of 1.64 for each million tons of output during the year. This rate was appreciably under that of 1.83 in 1944 and also was the lowest for any year since annual statistics became available in 1874. Of the total of 947 fatalities, 847 took place in underground workings, 12 in shafts, 26 in coal stripings and 62 at surface works associated with deep mines.

At Pennsylvania anthracite mines, an estimated total of 139 men were killed at work in 1945. Based on an estimated

output of 54,615,000 net tons, these fatal injuries occurred at the rate of 2.55 per million tons of production. The 1945 rate was an improvement over that of 2.70 per million tons in 1944 and also was lower than in any year in the statistical series extending back to 1870. At anthracite mines, 125 of the fatalities in 1945 occurred underground, one in a shaft, two in stripings and eleven in surface operations.

### Major Disasters

While the coal industry's safety record was generally better, major disasters were more frequent although less severe in lives lost than in 1944. In the five major disasters (those in which five or more lives were lost) in 1945, 68 men were killed, whereas in 1944, 94 men lost their lives in four disasters.

The record for 1944 included a fall of roof March 12 in a Pennsylvania mine that claimed the lives of five men, a mine explosion in Oklahoma Jan. 17 in which nine men were killed, an explosion in Utah March 14 causing the deaths of seven men, another Utah explosion May 9 killing 23 men and an explosion Dec. 26 in Kentucky in which preliminary reports list 24 men as dead. There were no major disasters in anthracite in 1945.

### Falls of Roof and Face

Falls of roof and face killed 532 men in 1945—more than half the total at all coal mines. The death rate was 0.84 per million tons of coal produced, which compares favorably with 0.99 in 1944. In bituminous mines, it is estimated that this hazard resulted in 459 fatalities to workers, or at a tentative rate of 0.80 per million tons. The 1945 rate was an improvement over that of 0.95 in 1944 and 1.56 in 1935.

Falls of roof and face in Pennsylvania anthracite mines killed 73 men in 1945, or at a rate of 1.34 per million tons of output. This rate was slightly above that of 1.30 in 1944. Also, it was ap-



## Coal-Mine Fatalities in the United States During 1945\*

Cause and Location	Bituminous		Pa. Anthracite		Total	
	Number of Fatalities	Rate per Million Tons Mined	Number of Fatalities	Rate per Million Tons Mined	Number of Fatalities	Rate per Million Tons Mined
<b>Underground:</b>						
Falls of roof and face	459	0.797	73	1.337	532	0.844
Haulage	209	.363	22	.403	231	.366
Explosions: Local	12	.021	5	.091	17	.027
Major	63	.109	...	...	63	.100
Explosives	26	.045	10	.183	36	.057
Electricity	22	.038	2	.037	24	.038
Machinery	40	.069	2	.037	42	.066
Miscellaneous	16	.028	11	.201	27	.043
<b>Total underground.</b>	<b>847</b>	<b>1.470</b>	<b>125</b>	<b>2.289</b>	<b>972</b>	<b>1.541</b>
Shaft	12	.021	1	.018	13	.021
Stripping	26	.045	2	.037	28	.044
Surface	62	.108	11	.201	73	.115
<b>Total, 1945</b>	<b>947</b>	<b>1.644</b>	<b>139</b>	<b>2.545</b>	<b>1,086</b>	<b>1.722</b>
<b>Total, 1944</b>	<b>1,134</b>	<b>1.830</b>	<b>172</b>	<b>2.700</b>	<b>1,306</b>	<b>1.911</b>
Production, 1945, tons (est.)	576,000,000		54,615,000		630,615,000	
Production, 1944	619,576,240		63,701,363		683,277,603	

\* Estimated

proximately two-thirds greater than the 1945 bituminous rate. One fall of roof landed in the major-disaster class in 1945 by taking the lives of five men in a Pennsylvania bituminous mine March 12. This was the first fall-of-roof accident in which five or more men were killed since July 1, 1938, when six men died in a similar disaster in Alabama.

### Haulage

The haulage hazard in underground workings usually ranks second among the principal causes of fatalities in coal mines. It is displaced to third position only in years when there is a heavy loss of lives in mine explosions. In 1945, 21 percent of all fatalities at coal mines, or a total of 231, resulted from haulage accidents, making the rate 0.37 per million tons mined. This was virtually the same rate as in 1944 but was an appreciable improvement over that of 0.54 in 1935.

In bituminous mines, 209 men were killed in haulage operations, making the rate 0.36 per million tons of output. Fatalities from haulage accidents in anthracite mines totalled 22 in 1945, or at a rate of 0.40 per million tons. This rate was not as favorable as that of 0.36 in 1944. Fatal injuries in haulage represented 16 percent of all fatalities in anthracite mines in 1945, against 22 percent in bituminous mines.

### Gas and Dust Explosions

Explosions of gas and coal dust killed 80 workers in United States coal mines

in 1945. Of these fatalities, 63 resulted from four major disasters (five or more lives lost in each) in bituminous mines. Consequently, the fatality rate for major explosions alone was 0.11 per million tons of bituminous coal produced. None of the explosions in anthracite mines fell into the major classification. Local explosions of gas and dust killed 17 men, 12 in bituminous mines and 5 in anthracite operations. The fatality rate for local explosions in all mines was 0.03 per million tons produced, a slight change from 0.02 in 1944.

### Explosives

Although the coal industry is the largest consumer of industrial explosives in the United States and coal mining requires considerable handling of explosives, only 36 of the 1,086 fatalities in 1945 were chargeable directly to explosives. Fatalities resulting from gas and dust explosions in which explosives may have been a contributing factor are not included in this classification.

The 36 explosives fatalities in 1945 occurred at a rate of 0.06 per million tons mined, which was slightly higher than in 1944 but well below the comparable rate of 0.12 ten years ago. In bituminous mines, 26 deaths resulted from the handling and use of explosives, making the rate 0.05 per million tons—less favorable than in 1944. In anthracite mines, the rate of 0.18 per million tons, resulting from ten fatalities charged to explosives in 1945, was appreciably lower than the 1944 rate of 0.28.

### Electricity

Fatalities from electricity showed a gratifying drop in 1945. The total for the year was 24, or at a rate of 0.04 per million tons of coal mined. The 1945 results therefore compare favorably with the 38 fatalities and a frequency rate of 0.06 recorded for all coal mines in 1944.

The reduction was effected principally in bituminous mines, where 22 fatalities from electricity resulted in a rate of 0.04 per million tons against 35 deaths and a rate of 0.06 in 1944. In anthracite mines in 1945, two fatalities were caused by electricity, making the rate 0.04 per million tons, a reduction from the comparable rate of 0.05 based on three fatalities in 1944.

### Machinery

Accidents caused by machinery resulted in the deaths of 42 employees underground in coal mines. The rate of 0.07 per million tons of coal for these fatalities was only slightly less than that for 1944. Forty of the 1945 fatalities occurred in bituminous mines and two in anthracite mines. Considering the more intensive use of machinery, the difficulty of keeping machines in the safest condition and the longer work day in effect in 1945, the fatal-injury record for the year was not too unsatisfactory.

### Other Causes

Nearly 90 percent of the fatal injuries in coal mines resulted from the foregoing principal causes of accidents. The remainder had their roots in a variety of hazards underground, in stripping operations, and in surface works associated with underground mines. In surface works, 73 men were killed, this total representing nearly 7 percent of all deaths at coal mines in 1945. Hazards in coal stripings claimed the lives of 28 men, or nearly 3 percent of the total fatalities.

### Non-Fatal Injuries

Based upon the fatality record in 1945 and the average ratio of fatal to non-fatal injuries in the 1939-43 period, it is estimated that approximately 50,500 non-fatal lost-time injuries occurred at coal mines in 1945, or at a rate of 80.08 per million tons of production. Estimates of lost-time non-fatal injuries may be subject to wide revisions upon receipt of detailed data from the producing companies. In bituminous mines, about 41,500 non-fatal injuries occurred, or at a rate of 72.05 per million tons mined. The estimated 9,000 disabled injuries at anthracite operations occurred at a rate of 164.79 per million tons of output in 1945.

# LOADERS AND CLEANERS

## Register Substantial Sales Gains in 1945

Paralleling Increases of 25.5 and 21.6 Percent in Loader and Conveyor Sales, Mechanically Loaded Tonnage Climbs to 45.7 Percent of the Total—Tonnage Mechanically Cleaned Rises to 26.0 Percent

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SALES of mechanical loading and cleaning equipment showed a decided upturn in 1945. Capacity of mechanical-loading equipment sold for underground use in all mines was 25 percent greater in 1945 than in the previous year.

Capacity of mechanical-cleaning equipment installed at bituminous mines in 1945 was 87 percent greater than in 1944.

Sales of "mother," or haulage, conveyors are shown for the first time in this report of 1945 sales.

This survey is made possible by the courteous cooperation of all known manufacturers of mechanical-cleaning equipment for bituminous mines and manufacturers of mechanical-loading and supplementary haulage equipment for use in all mines, together with data from various trade journals.

### Mechanical Loading

During 1944, 274,189,132 net tons of bituminous coal and lignite was loaded mechanically at underground mines, or 52.9 percent of the total bituminous and lignite underground output. In the same year, Pennsylvania anthracite mines loaded 14,975,146 net ton mechanically at underground mines, or 35.8 percent of the total underground output.

Bituminous-coal and lignite production by methods of mining and mechanical cleaning for the years 1943-45, inclusive, is shown in Table I. Preliminary estimates for 1945 indicate that the combined tonnage mined by stripping and mechanical loading underground aggregated 64.1 percent of the total output. Practically all coal mined by

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stripping is mechanically loaded. Therefore, the total tonnage mechanically loaded in 1945 was approximately 64 percent of the entire output.

In 1928, the first year complete figures were available on mechanical loading, about 8 percent of the total bituminous output (4 percent from underground mines and 4 percent from strip mines) was loaded mechanically and 92 percent by hand.

**Types of Units Sold**—Table II shows the number of mechanical-loading units sold for use in underground bituminous, anthracite and lignite mines as reported by manufacturers for the years 1938-45, inclusive.

Mobile loaders sold in 1945 totaled 359, an increase of 73 units, or 25.5 percent, over 1944. The 1945 total was the second largest in any year to date. The record year was 1941, when 368 units were sold. Sales of scrapers dropped from 39 in 1944 to 26 in 1945, a decrease of 33.3 percent.

Conveyor sales were 861 in 1945 compared with 708 in 1944, an increase of 21.6 percent. Only three pit-car loaders have been sold in the past three years—two in 1942 and one in 1943, with no sales reported in 1944. Therefore, the canvass of pit-car loader sales was discontinued in 1945.

**Regional Distribution of Sales**—Ta-

Table I—Bituminous Coal and Lignite Production by Methods of Mining and Mechanical Cleaning in the United States, 1943-1945, inclusive

	1943		1944		1945	
	Thousands of Net Tons	Percent of Total	Thousands of Net Tons	Percent of Total	Thousands of Net Tons	Percent of Total
Surface stripping.....	79,685	13.5	100,398	16.3	106,000	18.4
Hand loaded underground.....	260,687	44.2	244,489	39.5	207,000	35.9
Mechanically loaded underground.....	249,805	42.3	274,189	44.2	263,000	45.7
Total production.....	590,177	100.0	619,576	100.0	576,000	100.0
Mechanically cleaned.....	145,576	24.7	158,727	25.6	150,000	26.0

<sup>1</sup> Preliminary.

Table II—Units of Mechanical Loading Equipment Sold to Bituminous-Coal, Anthracite, and Lignite Mines for Underground Use in the United States, as Reported by Manufacturers, 1938-45, Inclusive.

Type of equipment:	1938	1939	1940	1941	1942	1943	1944	1945	Percent Change, 1945
									From 1944
Mobile loaders.....	241	292	233	368	352	234	286	359	+25.5
Scrapers <sup>1</sup> .....	10	26	39	11	29	15	39	26	-33.3
Conveyors <sup>2</sup> .....	990	1,311	1,762	2,130	1,491	1,100	708	861	+21.6
Pit-car loaders.....	139	2	3	10	2	1	....	....	....
Total, all types.....	1,380	1,631	2,037	2,519	1,874	1,350	1,033	1,246	+20.6
Number of manufacturers reporting.....	29	31	32	32	28	24	22	25	....

<sup>1</sup> Reported as scrapers or scraper haulers and hoists.

<sup>2</sup> Includes hand-loaded conveyors and those equipped with duckbills or other self-loading heads. Sales of both loading heads and shaker conveyors were counted for the years 1938-41, inclusive, but the figures for 1942-45, inclusive, do not include loading heads separately.

<sup>3</sup> Canvass of sales of pit-car loaders discontinued in 1945.

**Table III—Total Number of Units of Mechanized Loading Equipment Shipped for Use in Each State or Region in 1945.**  
(L—Mobile loading machines; S—Scrapers; C—Conveyors)

State and Region	Number of Units of All Types Shipped in 1945	Types of Equipment in Approximate Order of Capacity in 1945
<b>Northern Appalachian States:</b>		
Michigan	2	C.
Ohio	38	L.C.
Pennsylvania	177	L.C.
<b>Southern Appalachian States:</b>		
Alabama	53	L.C.S.
Kentucky	180	L.C.
Tennessee	41	C.L.
Virginia	64	C.L.
West Virginia	395	L.C.
<b>Middle Western States:</b>		
Illinois	41	L.C.
Indiana	13	L.C.
<b>Trans-Mississippi States:</b>		
Arkansas, Iowa and Oklahoma	17	C.S.
Colorado	32	C.S.
Montana and Utah	26	L.C.
New Mexico and Washington	3	L.C.
Wyoming	11	C.
Total bituminous and lignite	1,093	L.C.S.
Pennsylvania anthracite	153	C.S.L.
<b>Grand total</b>	<b>1,246</b>	<b>L.C.S.</b>

ble III shows the number of mechanized-loading units shipped to the various States and regions in 1945. Types of equipment shipped are shown by letter symbols in approximate order of capacity. For example, 53 mechanical-loading units were shipped to Alabama. Of this total, mobile loaders, indicated by "L," furnished the largest addition to capacity, followed by conveyors, "C," and scrapers, "S." Capacities are based on actual performance as reported by mine operators for the year 1944. There were 1,093 mechanical-loading units of

all types shipped to bituminous-coal and lignite mines and 153 to Pennsylvania anthracite mines in 1945. In addition, a few units went to foreign countries.

**Types of Machines Sold Compared With Units in Use**—The trend in demand for different types of equipment is shown in Table IV. The number of mobile loaders in use at bituminous-coal and lignite mines increased from 980 in 1936 to 2,737 in 1944 while scrapers showed little change and pit-car loaders in use declined from 1,851 to 241.

**Table IV—Sales of Mechanical Loading Equipment in 1945 Compared With Total Number of Machines in Active Use in Preceding Years.**

	Number of Machines in Active Use as Reported by Mine Operators									Number of Machines Sold as Reported by Manufacturers in 1945
	1936	1937	1938	1939	1940	1941	1942	1943	1944	
<b>Bituminous and lignite mines:</b>										
Mobile loading machines	980	..... <sup>1</sup>	1,405	1,573	1,720	1,985	2,301	2,525	2,737	349
Scrapers	106	..... <sup>1</sup>	117	131	116	109	93	83	87	6
Pit-car loaders	1,851	..... <sup>1</sup>	1,392	873	697	607	481	321	241	... <sup>2</sup>
Conveyors equipped with duckbills or other self-loading heads	234	..... <sup>1</sup>	346	559	656	788	1,062	1,226	1,331	... <sup>3</sup>
Hand-loaded conveyors—number of units	936	..... <sup>1</sup>	1,526	1,834	2,263	2,807	3,041	3,191	3,236	738 <sup>4</sup>
<b>Anthracite mines (Pennsylvania):</b>										
Mobile loading machines	..... <sup>4</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>4</sup>	10				
Scrapers	504 <sup>4</sup>	539	545	535	547 <sup>4</sup>	505 <sup>4</sup>	524 <sup>4</sup>	515 <sup>4</sup>	503 <sup>4</sup>	20
Pit-car loaders	..... <sup>6</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>6</sup>	... <sup>2</sup>				
Conveyors equipped with duckbills or other self-loading heads	..... <sup>6</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>5</sup>	..... <sup>6</sup>	... <sup>3</sup>				
Hand-loaded conveyors—number of units	1,790 <sup>6</sup>	1,855 <sup>6</sup>	1,831 <sup>6</sup>	1,997 <sup>6</sup>	2,189 <sup>6</sup>	2,432 <sup>6</sup>	2,491 <sup>6</sup>	2,701 <sup>6</sup>	2,807 <sup>6</sup>	123 <sup>6</sup>

<sup>1</sup> Data for 1937 not available for bituminous and lignite mines.

<sup>2</sup> canvass of sales of pit-car loaders discontinued in 1945.

<sup>3</sup> Sales of conveyors equipped with duckbills or other self-loading heads are included with hand-loaded conveyors.

<sup>4</sup> Mobile loading machines are included with scrapers.

<sup>5</sup> Mobile loading machines, pit-car loaders and conveyors equipped with duckbills or other self-loading heads are included with hand-loaded conveyors.

<sup>6</sup> Pit-car loaders and conveyors equipped with duckbills or other self-loading heads are included with hand-loaded conveyors.

Conveyors equipped with duckbills or other self-loading heads increased more than fivefold in number of machines in active use during the 1936-44 period. Hand-loaded conveyors in active use increased from 936 in 1936 to 3,236 in 1944. There were 738 conveyor units sold in 1945, or 16.2 percent of the total (hand- and self-loading combined) in use in 1944.

Pennsylvania anthracite mines have shown little change in the number of mobile loaders and scrapers in use in the nine-year period 1936-44, the total varying from a low of 503 to a high of 547.

Conveyors of all types and pit-car loaders in use at Pennsylvania anthracite mines increased from 1,790 in 1936 to 2,807 in 1944.

**Types of Equipment Purchased by Regions.**—Table V shows the number of mobile loaders, scrapers and conveyor units shipped into various States and regions in 1945 and the number in actual use in 1944. West Virginia received the largest number of mobile loaders, with Pennsylvania, Kentucky and Illinois following in the order named. Pennsylvania anthracite mines received ten of the 359 mobile loaders shipped in 1945.

Scraper units sold in 1945 totaled 26, bituminous mines receiving six and the anthracite mines 20.

West Virginia received 265, or 35.9 percent, of the total conveyors sold to bituminous mines in 1945.

## Haulage Equipment

**"Mother" Conveyors**—For the purpose of this survey, a "mother," or haulage, conveyor is defined as a sectional, extensible, power-driven conveying

unit with capacity to handle over 500 ft. of conveyor.

Sales of "mother," or haulage, conveyors have been included in the 1945 survey for the first time. Table V shows the number in use in 1944 and the sales in 1945. West Virginia received 56 "mother" conveyors, or 41 percent of the total sales to bituminous mines.

No estimates have been made of the capacities of these "mother," or haulage, conveyors and they are not included in any of the summaries of mechanical-loading equipment.

**Trackless Gathering Equipment**—Sales of shuttle cars, or rubber-tired self-powered haulage units, increased in 1945 as compared to 1944. Deliveries were made in 13 States in 1945. West Virginia received the largest number, with Pennsylvania, Kentucky, Indiana and Illinois following in the order named.

During 1944, 19 percent of the bituminous coal handled by mobile loaders was loaded into rubber-tired trucks and 4 percent was loaded onto conveyors for the initial phase of transportation. The remainder of the mobile-loaded tonnage (77 percent) was loaded directly into mine cars.

Table VI shows the number of mobile loaders in use in bituminous-coal and lignite mines in 1944 by States, regions and types of loading. There were 472 mobile loaders loading into rubber-tired trucks. Each mobile loader requires one to three rubber-tired trucks. Therefore, there were approximately 950 rubber-tired trucks in use in bituminous mines in 1944.

## Mechanical Cleaning

**Sales of Mechanical-Cleaning Equipment for Bituminous Coal**—Reports on sales of bituminous-coal-cleaning equipment from 14 manufacturers show that installations were made in eleven States in 1945 against twelve States in 1944. However, the total capacity of the 1945 installations was 87 percent greater than in 1944.

Total capacity of bituminous-coal-cleaning equipment sold in 1945 was 10,100 net tons of cleaned coal per hour against 5,400 net tons of capacity sold in 1944. Some of the equipment sold in 1945 will not be placed in operation until early in 1946. In terms of capacity, about 50 percent of the installations were additions to or replacements of equipment at mines that already had cleaning plants and the other 50 percent were made at mines that had no cleaning facilities. West Virginia ranked first in terms of capacity of new installations in 1945, followed by Illinois, Kentucky, Indiana and Pennsylvania in the order named.

**Table V—Comparison of Mechanical-Loading Equipment and "Mother" Conveyors in Actual Use in 1944 with Sales Reported in 1945, by States and Regions.**

State and Region	Mechanical Loading Equipment						"Mother" Conveyors	
	Mobile Loaders		Scrapers		Conveyors <sup>1</sup>		In Use	Sales
	In Use in 1944	Sales in 1945	In Use in 1944	Sales in 1945	In Use in 1944	Sales in 1945	In Use in 1944	Sales in 1945
<b>BITUMINOUS AND LIGNITE MINES</b>								
<b>Northern Appalachian States:</b>								
Maryland	...	...	...	...	32	...	...	2
Michigan	...	...	...	...	5	2	...	2
Ohio	161	18	...	...	203	20	27	4
Pennsylvania	583	80	12	...	833	97	84	15
<b>Southern Appalachian States:</b>								
Alabama	91	14	47	2	394	37	70	3
Kentucky	212	54	...	...	504	126	76	21
Tennessee	13	1	...	...	133	40	21	8
Virginia	61	12	...	...	111	52	11	5
West Virginia	674	130	4	...	1,308	265	243	56
<b>Middle Western States:</b>								
Illinois	587	23	...	...	25	18	25	17
Indiana	164	7	...	...	...	6	1	1
<b>Trans-Mississippi States<sup>2</sup>:</b>	191	10	24	4	1,019	75	86	3
Total bituminous and lignite	2,737	349	87	6	4,567	735	644	137
<b>ANTHRACITE MINES</b>								
<b>Pennsylvania:</b>	...	10	503 <sup>3</sup>	20	2,807 <sup>4</sup>	123	...	5
Grand total	...	359	...	26	...	861	...	142

<sup>1</sup> Includes hand-loaded conveyors and conveyors equipped with duckbills or other self-loading heads.

<sup>2</sup> Includes all haulage conveyors with capacities over 500 ft. except main-slope conveyors.

<sup>3</sup> Includes Arkansas, Colorado, Iowa, Montana, New Mexico, North Dakota, Oklahoma, Utah, Washington and Wyoming.

<sup>4</sup> Mobile loaders included with scrapers.

<sup>5</sup> Includes pit-car loaders and duckbills or other self-loading conveyors.

<sup>6</sup> Data not available.

**Table VI—Number of Mobile Loaders in Use in Bituminous-Coal and Lignite Mines, by States and Regions, Subdivided by Types of Loading, in 1944.**

State and Region	Number of Mobile Loaders			Total Number in Use
	Loading Direct Into Mine Cars	Loading on to Conveyors	Loading Into Rubber-Tired Trucks	
<b>Northern Appalachian States:</b>				
Ohio	119	16	26	161
Pennsylvania	447	32	104	583
<b>Southern Appalachian States:</b>				
Alabama	36	35	20	91
Kentucky	123	10	79	212
Tennessee	4	...	9	13
Virginia	52	5	4	61
West Virginia	582	8	84	674
<b>Middle Western States:</b>				
Illinois	476	28	83	587
Indiana	131	...	33	164
<b>Trans-Mississippi States<sup>1</sup>:</b>	147	14	30	191
Total	2,117	148	472	2,737

<sup>1</sup> Includes Colorado, Iowa, Montana, New Mexico, North Dakota, Oklahoma, Utah, Washington and Wyoming.

Wet methods of coal cleaning include piston- or common-type jigs, Baum-type jigs, concentrating tables, launders and upward-current classifiers and any combination of these four types. About 87 percent of the total bituminous coal cleaned was cleaned by wet methods in 1944. Approximately 90 percent of the capacity of 1945 sales was wet.

Pneumatic methods of coal cleaning include air tables and air-flow or air-sand units or any combination of the three types. About 13 percent of the total bituminous coal cleaned in 1944 was cleaned by pneumatic methods. About 10 percent of the total capacity of cleaning equipment sold in 1945 was pneumatic.

# THAWING PITS

## Speed Dumping of Frozen Cars at Hauto

Air-Oil Burners in Multiple Pits Thaw Frozen Railroad Cars in 20 Minutes—Radiant Heat Thrown Off by Pit Lining Does the Work—Oil Consumption 10 to 15 Gal. per Car in Moderately Cold Weather

By R. R. RICHART  
Assistant Editor, Coal Age

A SIX-PIT high-pressure air-oil burner installation, one of 35 made in the anthracite region within the past two years, is expected to thaw 20 cars of "culm bank" coal per shift during the coldest weather at Hauto Coal Co.'s new breaker, Hauto, Carbon County, Pa. Radiant heat, produced by oil burners firing from both sides of the refractory-lined pits, percolates upward to heat uniformly two-, three- and four-hopper cars without the direct flame contact

produced by torches. If the weather is not too cold a car can be thawed in 20 minutes with a consumption of 10 to 15 gal. of fuel oil.

Heretofore, below freezing temperatures have handicapped operations at the breaker, where a substantial share of the culm-bank coal processed comes by car from the Lehigh Navigation Coal Co.'s Greenwood colliery, some 12 miles away across Sharp Mountain. Before the cars are loaded all rock above 5 in. is screened out of the run-of-bank material. In loading the cars during freezing weather moisture collects and freezes particularly around the doors of the

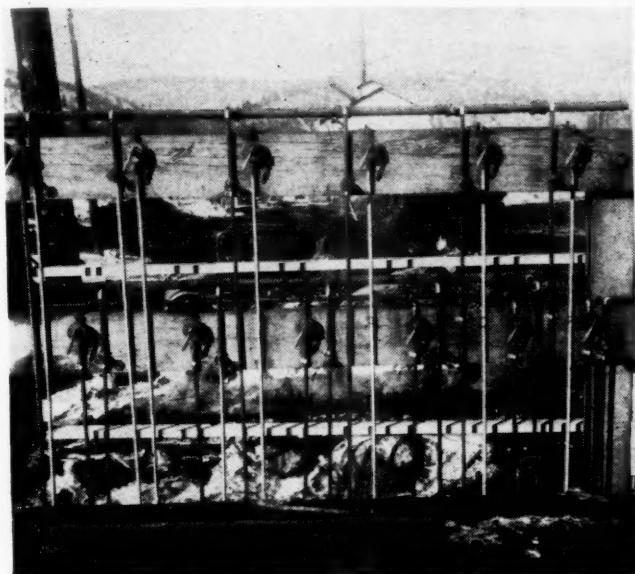
hoppers. If the cars are not unloaded within a few hours, as is the case when they stand over Sunday or a holiday, it becomes quite a problem to thaw and dump the cars with any degree of regularity.

### Replaces Old Method

In the past men using hand-held, low-pressure, oil-fired torches thawed the cars after a fashion. The system was expensive, inefficient and destructive. The fact that it was hard on cars spelled a need for better thawing equipment. Since 1943, the Hauck thawing pit has



Six oil-fired pits in two groups are available for thawing two-, three- and four-hopper cars at the Hauto breaker



Air and oil controls for the six pits (twelve burners) are centrally located.



These four pits on 61-in. centers are for thawing three- and four-hopper cars.

been available for this purpose. Railroads also are among the industrial users of this equipment. It is asserted that one man can attend to as many as twelve pits at one time.

At Hauto, two thawing installations are located on the same track. One is a two-pit arrangement for a two-hopper car and a four-pit layout for thawing three- and four-hopper cars. Each 37x40-in. pit is 17 in. deep and lined

with firebrick. In equipping each of the oil-fired pits the manufacturer furnished two burners with air registers, air control valves, dial type micro-regulating oil valves, oil shut-off valves, oil filters and refractory ignition tiles. To complete the installation the purchaser provided a 10,000-gal. oil storage tank, air compressor, piping, firebrick and necessary reinforced-concrete and masonry construction.

The twelve oil burners are supplied with No. 2 fuel oil (Pure Oil) from the storage tank by a motor-driven Tri-Rotor (Yale & Towne) oil pump. The pump has a capacity of 20 g.p.m. at 1,140 r.p.m. The oil is atomized by compressed air, each two-burner pit consuming as much as 50 c.f.m. at 60 lb. per square inch. An Ingersoll-Rand 75B compressor driven by a 75-hp. Westinghouse line-start squirrel-cage motor was

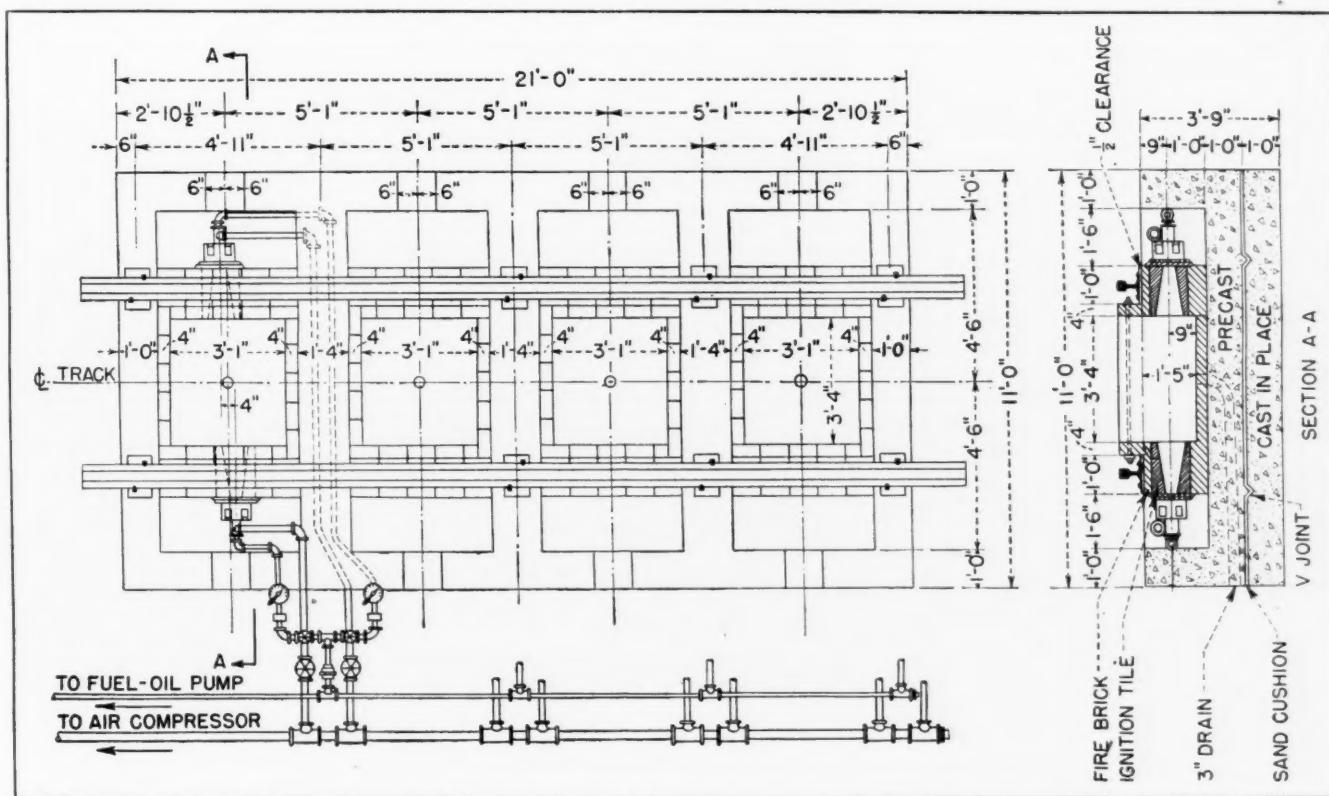


Fig 1—How the four pits are arranged to serve the three- and four-hopper cars.



No. 2 fuel oil is stored in a 10,000-gal. tank remotely located.

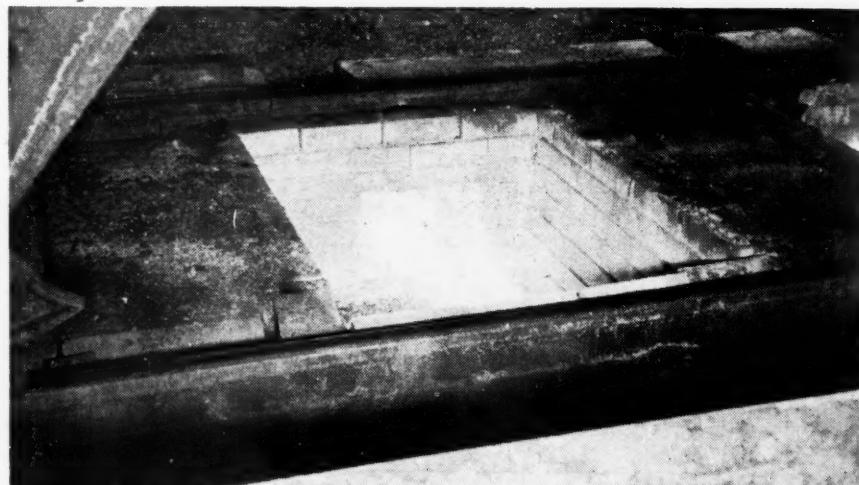
installed for this purpose. As illustrated in the sketch, elsewhere in this article, the two burners in each pit are not located opposite each other, but are staggered 4 in. As the two flames impinge on each other a whirling action is imparted to the hot gases. If the air and oil controls are properly adjusted little of the flame is visible above the pit. None of the flame strikes the surface of the car. The refractory lining of the pit, maintained at a "white" heat, radiates heat to any surface of the car exposed to it.

#### Thaws in 20 Minutes

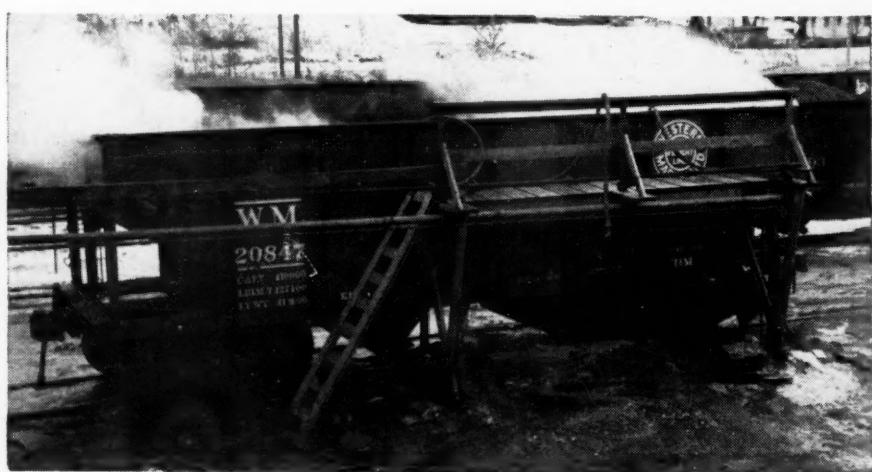
If the weather is not too cold a car of culm-bank coal may be thawed in 20 minutes with an oil consumption of 10 to 15 gal. During the operation water streams out all along the edges of the doors to the hoppers. Any of the water falling into the pit is carried away by a drain.

To make certain that no coal remains frozen to the sides of the car, each car is pinched down the track to a hot-water thawing station. Here three 2-in. hose lines pour hot water into the car. When the contents of the car has been thoroughly drenched the car is moved into the dump house and the coal dumped.

Officials and supervisors of the Hauto Coal Co. are: W. H. Lesser, superintendent; Herbert Cauley, foreman. All trucking operations, both at the Greenwood colliery and the Hauto colliery culm banks, are in charge of the Central Pennsylvania Quarry, Stripping and Construction Co., Hazleton, Pa.



Flames from the burners are arranged so that they never touch the bottom of the car. Each pit is lined with firebrick.



Hot water is turned on the coal to make certain that none of it remains frozen to the sides of the car.

# 25-CU.YD. DRAGLINE

## Heads Modern Units at New Maumee Pit

With an Average of 55 Ft. of Overburden, Maumee Uses First 25-Yd. Walking Dragline in the Bituminous Industry for Stripping—Other Equipment and Methods Are Matched for High Efficiency and Quality

SET DOWN in the midst of millions of tons of Indiana No. 4 vein premium coal, which will be marketed under the company's trade name "Linton," with an overburden that modern machinery and methods can handle at a cost within bounds and with preparation designed to meet market needs, a long life is assured for the new Linton Mine No. 28 of the Maumee Collieries Co., east of Midland, Ind. The outcrop of the large No. 4 acreage now being recovered at this operation was mined to a depth of 45 ft. by steam stripping shovels a generation ago, and the fact that the present program is economically feasible reflects the development of the large modern walking dragline with high capacity and long

reach—a development in which Maumee was the pioneer.

The overburden at No. 28 varies from 40 to 75 ft. in thickness with the average around 55 ft. The materials also vary in makeup and thicknesses of strata. A fair sample with a 53-ft. total thickness is: clay, 16 ft.; sandrock, 12 ft.; and blue shale, 25 ft. With a  $3\frac{1}{4}$ -ft. vein of coal the ratio of overburden to coal is fifteen to one.

The prime requisite for successful stripping and low shovel maintenance is a high wall so thoroughly blasted and broken up that the excavator can handle it without hesitation. To attain that end consistently, Maumee Collieries Co. has the drilling and blasting at all mines directed by an explosives

engineer. The factors of hole diameter, spacing, type and size of explosive, method of loading and number of holes shot at a time are constantly coordinated to get best results.

The drills at No. 28 are 42-T Bucyrus-Erie units with tools for 10-in. holes. They have several features to promote quick moving, fast drilling and reduce repairs to a minimum. The crawlers are 36 in. wide; consequently, they seldom mire. When working they rest on three hydraulic jacks, which provide a firm foundation and make leveling quick and positive. The mast pulley is mounted on a rubber buffer, which permits considerable movement and relieves the steel drill rope of shock.

The hole spacing for a box cut is



Linton Mine No. 28 in action. The equipment list is headed by a 25-cu.yd. walking dragline for stripping up to 75 ft. Haulage unit and  $3\frac{1}{2}$ -cu.yd. loading shovel appear in the foreground.

25x25 ft. In other work, holes are spaced farther apart—up to 27x30 ft. This spacing produces 30 cu.yd. of material for each foot of drillhole. Holes are drilled down to the coal. Drills are operated three shifts. Footage is approximately 700 ft. per 24 hours per drill. Crews comprise two men per drill on the second and third shifts and three men on the day shift, the third day man shooting for all shifts.

Drilling is kept far enough ahead of the stripper to provide a buffer of two rows of holes (54 ft.) to shoot against. This gives better fragmentation than shooting too close to the pit. Large-volume types of explosives have some advantages. Being largely of ammonium nitrate, they are not so fast as nitroglycerin types. The quantity of water encountered has some influence on the choice, for some explosives are less water-resistant than others. Five or six holes fired at a time break the material up better than fewer holes.

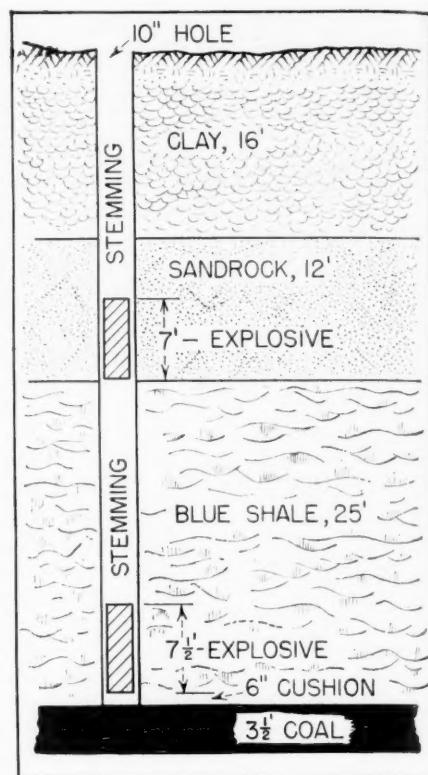
The quantity of explosive used is based on the volume of material to be broken. The usual setup is 4 cu.yd. of shale or 2 cu.yd. of sand rock per pound. The accompanying figure shows the loading of a 53-ft. hole using 8½-in.-diameter explosive. All tamping is done with a wooden tamping pole. Caps are used for shooting with an electric blasting machine. Various explosives are used, as indicated by local conditions. Coal EX-A, with a speed of 6,200 ft., normally is employed. EP-81 and EP-

85 are other types used for particular conditions.

With previous experience and observation of the work of a similar machine in the anthracite region of Pennsylvania as guides, Maumee naturally was led to the installation of a 25-cu.yd. dragline to handle the heavy overburden over the large acreage of coal at its new operation. Other modern equipment, modern methods and experienced management with assigned responsibility are expected to make this latest Maumee mine another profitable operation.

The Bucyrus-Erie 1150-B walker installed for the job embodies many modern ideas, is substantially built, and runs very smoothly. The mechanical sturdiness is apparent in the heavy frame and the freedom from vibration in all parts, including the boom. The supporting cables are anchored to the boom about one-third the distance from cab to sheave wheel, eliminating most of the vibration in them. Likewise, the twin hoist ropes run over an intermediate sheave to reduce sag and vibration.

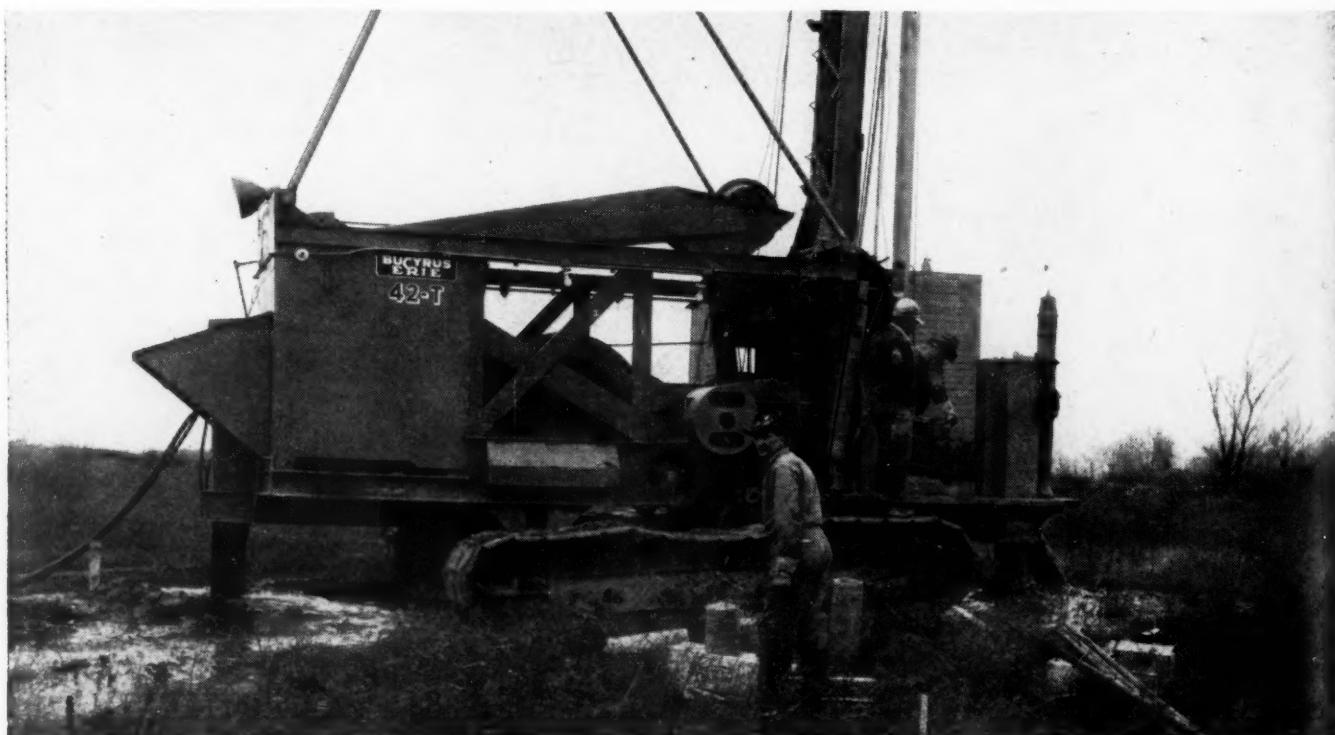
Some of the principal specifications are: boom, 180 ft.; tub, 44 ft.; pontoons, 8x43 ft.; twin drag cables, 2½ in.; twin hoist cables, 2 in.; travel, about 6½ ft. per shaft revolution. The 25-yd. Red Arch bucket is No. A, Type AX. It is made up with cast-steel lip, heel plate, rear corners and pulling eyes; forged lifting eye; and rolled steel bottom, sides and rear. The rear end is reinforced with heavy angles



Cross-section of 53-ft. drillhole showing the location and quantity of 8½-in.-diameter explosive employed.

across the width, with doubled sides under the bail.

The electric power equipment consists of two similar General Electric



High-wall drill at work. Wide crawlers and hydraulic jacks for leveling facilitate operation.

motor-generator sets, each driven by one 900-hp. 1,800-r.p.m. 4,000-volt synchronous motor with amplidyne exciter for power-factor correction and voltage control. Each motor drives six d.c. generators, three on each side, to complete the set. The generators, in order from the motor, are: hoist, 190 kw.; drag, 190 kw.; and swing, 112.5 kw. Of the latter there are only three, the fourth being an exciter for the motors. The d.c. generators also are equipped with amplidyne excitors for more exact control and more rapid motor acceleration.

The dragline is driven by two 450-hp. drag motors, two 450-hp. hoist motors and three 125-hp. swing motors. Fast action characterizes the movement of the machine. Timing on the job indicates in excess of one cycle per minute where digging conditions permit prompt bucket loading.

The dragline normally operates on a bench at the bottom of the clay, first spreading an 18-in. layer of shale to prevent slipping. The clay within reach is first worked down and the machine then follows up by digging sand and shale in the main bank, all spoiled across the pit.

#### Bulldozer Levels Shale

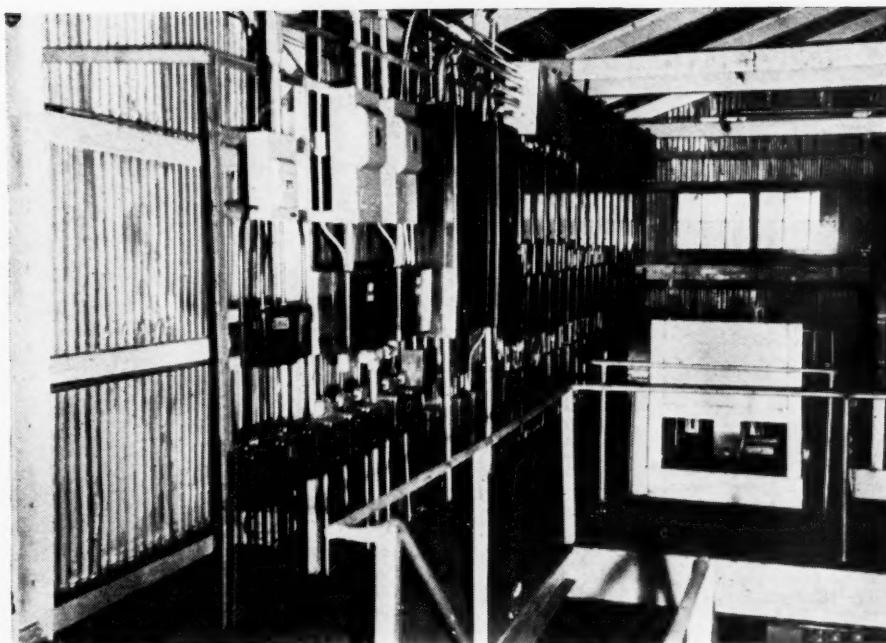
Working on the bench with the stripper is an H-D tractor equipped with bulldozer, which levels off the layer of shale for the dragline foundation and assembles the loose clay from the surface stripping so it can be cleaned up by the dragline bucket.

Coal is loaded without shooting directly into 30-ton haulage units by a Marion 3½-yd. 480 shovel. The haulage units, are made up of Dart Model 250x 462 tractors pulling Austin-Western semi-trailers equipped with air-operated bottom-opening clamshell doors. The present haul is very short and only three units are needed.

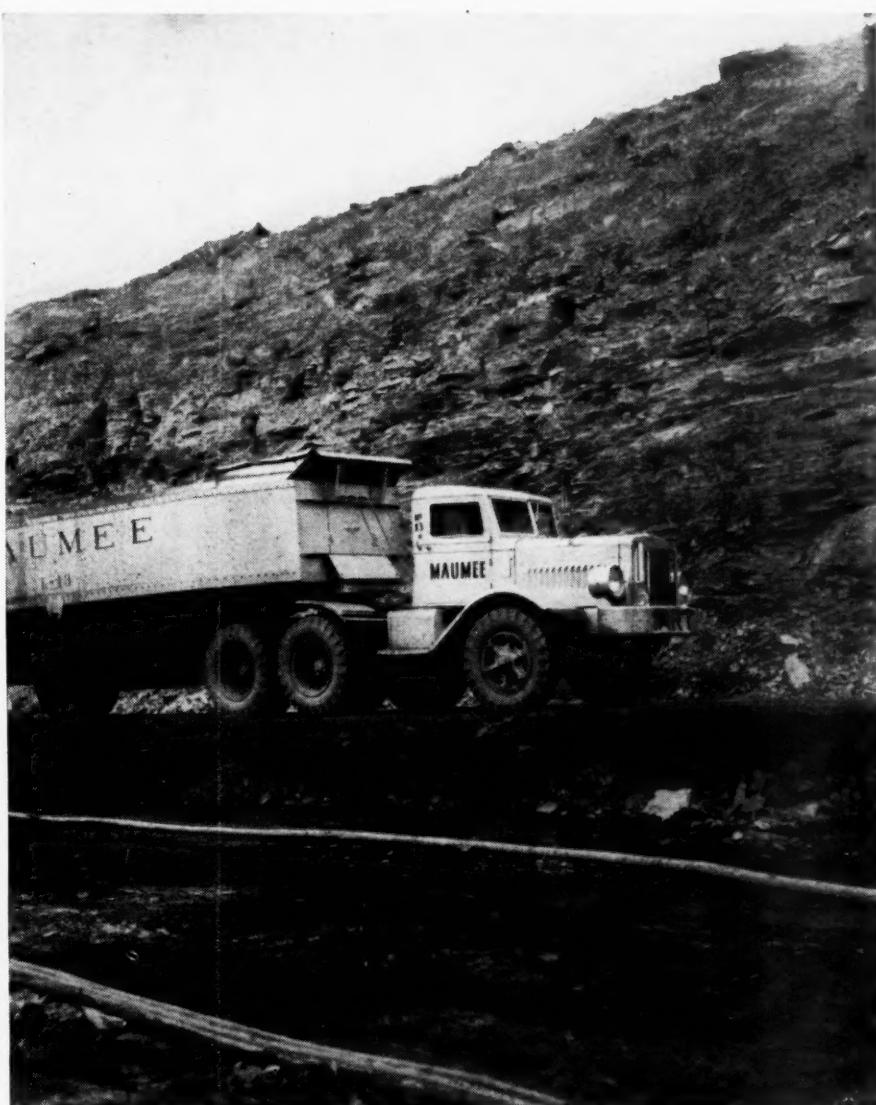
The tractors have ten 11.00x24-in. tires. The trailers have four 14.00x24-in. rear tires. One tractor is equipped with a 200-hp. supercharged Cummins diesel engine and the other two with 198-hp. Hercules gasoline engines. Trucks are housed in a concrete block garage built for six.

Truck roads have a heavy shale base on which is laid 5 or 6 in. of crushed limestone, which is sprinkled and dragged during working hours. A road grader with the usual attachments is available for construction and maintenance.

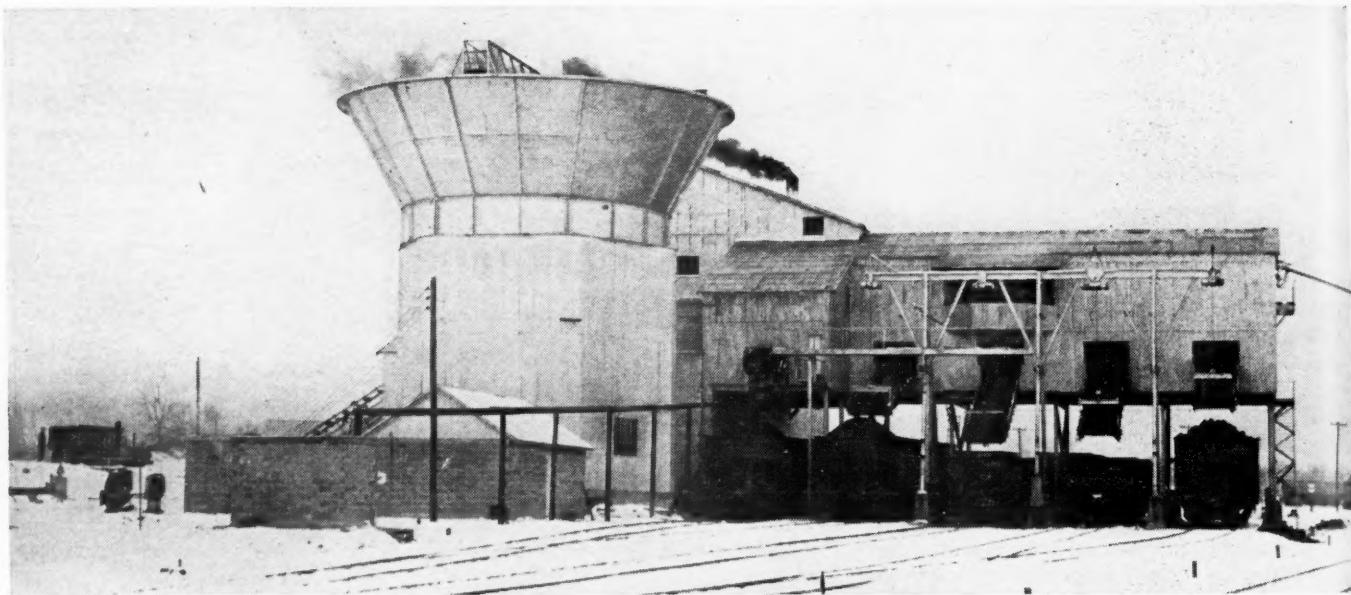
The Link-Belt washing plant originally serving the company's No. 25 mine was moved to No. 28 and re-erected with certain changes and improvements during the past summer.



Pushbutton-operated control installation in preparation plant, away from accidental flooding.



High wall, showing sand and shale. The top clay has been removed at this point. Capacity of the tractor-semi-trailer haulage unit is 30 tons.



Home of "Linton" coal—new five-track preparation plant at Mine No. 28.

The entire frame is arc welded, making a job in which vibration is scarcely noticeable.

The jig box was changed from four to five cells. The air-valve cam shaft was cut in two, each end being now separately driven through a variable-speed reducer with the idea that washing could be improved. This plan gets the cells out of step and is now considered questionable. The jig box washes 2x0-in. coal. A trough washer with ratchet-driven rotary star valves for removing refuse cleans the 4x2-in. coal. The 8-in. lump coal is crushed to a top size of 8 in. and the 8x4-in. is hand picked.

One modern addition is two 6x16-ft. Allis-Chalmers Low-Head vibrating screens for dewatering 3x0 stoker coal. These are double-deck units with  $\frac{1}{2}$ -in.

stainless-steel woven mesh on the upper deck and  $\frac{1}{2}$ -mm. on the lower. The load is equally divided between the two screens, the  $\frac{3}{4} \times \frac{1}{2}$  going to the loading chute and the  $\frac{1}{2} \times \frac{1}{2}$ -mm. to a centrifugal dryer. The  $\frac{1}{2}$ -mm. material is carried to waste by the effluent.

Another change is a new settling cone instead of the tank originally used. A feature of this cone is provision for preventing erosion of the extreme lower end by fine pyrite. This is accomplished by extending the discharge pipe up into the cone. The space thus formed fills with settling, preventing abrasive material from touching the cone plates near the bottom.

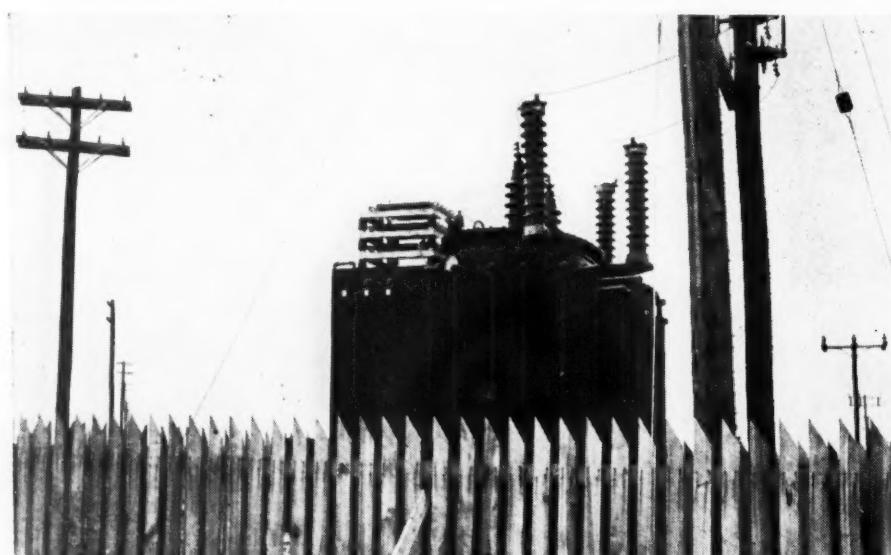
The preparation plant produces 8x4-in. hand-picked lump and washed 4x2-, 2x1 $\frac{1}{2}$ -, 1 $\frac{1}{2}$ x $\frac{3}{4}$ -, and  $\frac{3}{4} \times \frac{1}{2}$ -mm. sizes. These may be loaded as such, there being

five tracks, or in such combinations as the market may demand.

An important feature of the preparation plant is the power setup. The motor controls are all out of reach of water from flooding of tanks, jig boxes or sluiceways. The voltage is over rather than under standard 440, giving the motors pep and minimizing the chance of stalling. The three legs of the 440-volt three-phase motor supply are each connected to a grounded neutral through two 285-volt lamps in series. This immediately indicates the grounding of any power lead by the lamps on that lead going out. The result is prompt location and clearing of faults and the prevention of shutdown due to shorts.

Power distribution for No. 28 mine emphasizes safety, convenience and reliability. It begins with a Westinghouse three-phase 33,000- to 4,160-volt grounded-Y portable self-contained substation that may be loaded on a truck, moved to a new location and put on the line in a matter of hours. The only electrical connections are three wires in and four out, all well out of reach from the ground. All indicating instruments and control devices are in weatherproof inclosures that may be locked. An extra item, the ground-limiting resistor, has been mounted on top of the control section by the mine crew, making the unit complete from lightning arrestors to ground resistor.

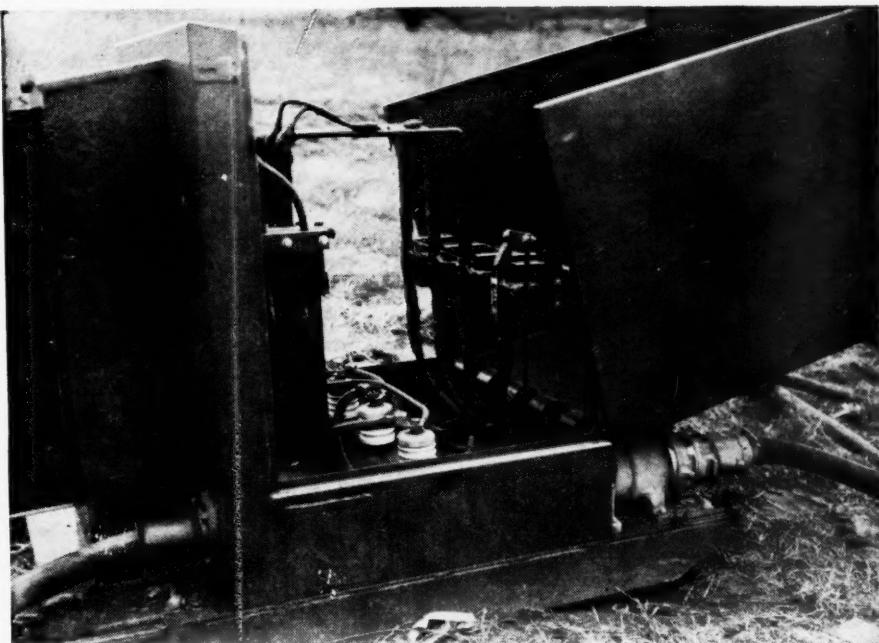
The ground-limiting resistor is designed to limit ground-wire current to 25 amp. and voltage (from machine to actual ground surface) to 100. In practice the latter measures 85 volts. This device is tested every week to make sure it is in working order.



Ground-limiting resistor installed on top of the modern 33,000-4,160-volt portable-unit substation.

## Maumee Management

O. S. Roberts.....	President
Hugh B. Lee.....	Vice President and General Manager
David W. Aten.....	Vice President and Secretary
George W. Rae.....	General Superintendent
Lafe Stewart.....	Mining Engineer
Floyd Jackson.....	Field Engineer
W. E. Spainhauer.....	Mechanical Engineer
Earl Winters.....	Superintendent, Mine Equipment
Lloyd Brown.....	Preparation Engineer
Evans Bennington.....	Electrical Engineer
Robert Akre.....	Explosives Engineer
Joe Bercham.....	Haulage Superintendent
Sylvester Hadley.....	Construction Foreman
Oscar Wolff.....	Superintendent, Mine No. 28
Henry Wonders.....	Mine Foreman
Judge Garwood.....	Preparation Foreman
Ad Cohen.....	Office Manager



Side view of portable steel switch house opened to show oil circuit breaker, potential and current transformers and general construction.



Rear view of portable steel switch house, showing the 5,000-volt receptacles and attachment plugs. When not in use, receptacles are waterproof with screw caps.

A pole line reaches to near the pit, from which a cable is laid along the high wall in sections. The sections are connected through portable switch houses, of which there are five. These steel switch houses, mounted on steel runners, are very different from the average. They are totally inclosed and may be locked. The front side is fixed and mounts the oil circuit breaker, which is hand-operated but trips automatically on overcurrent, ground current or no voltage. It protects the trailing cables leading to stripper, loader and low-voltage transformers supplying drills and pumps.

The other three sides and the top of this switch house are in one piece and hinged near the base at the rear. This section may be turned back and the whole inside exposed for repair or alteration. At the rear, or sides, are mounted three G. E. high-voltage (5,000) waterproof receptacles for attaching 4,000-volt cables leading to pit or transformers. Screwed caps keep the weather out when not in use. These are four-conductor devices, the fourth connection being the ground wire, which is continuous from power substation to shovels.

The power supply for drills and pumps is 440-volt, supplied from portable steel sled-mounted transformers, which are plugged in to the portable switch houses previously described.

Maintenance gets the first call at Mine 28. The entire present operation is within one-half mile of facilities serving all Maumee mines. These facilities include shops, warehouses and maintenance personnel. At the shops, a large percentage of the repair items required at the company's five operating mines are manufactured and fabricated. Maintenance on general items, automo-

tive equipment and electrical equipment is handled in the several shop buildings and in the nearby erection yards.

An extensive stock of heavy parts for all mine equipment, including such items as complete spare buckets for the new dragline and other stripping units, is carried at this location. Small stocks for everyday needs are carried on important machines at each mine. Each morning items used the previous day are phoned to the central warehouse and replaced that day by the department's own delivery service, covering all mines daily. Cranes and chain blocks are in-

stalled in sections for storing heavy parts.

The general repair shop is housed in a buff glazed-tile and steel building that includes separate machine and blacksmith shops, the supply office and the master mechanic's office. This also is a consultation center for maintenance supervisors for all mines.

The shop has 18 or 20 machine tools ranging from drill-press to milling machine. Housed in one corner are two air compressors driven by 40-hp. motors with pressure control. Outside is a heavy hydraulic press with hand and motor-driven oil pumps.

# HIGH EFFICIENCY

## Marks Operation at New Sewell No. 1 Mine

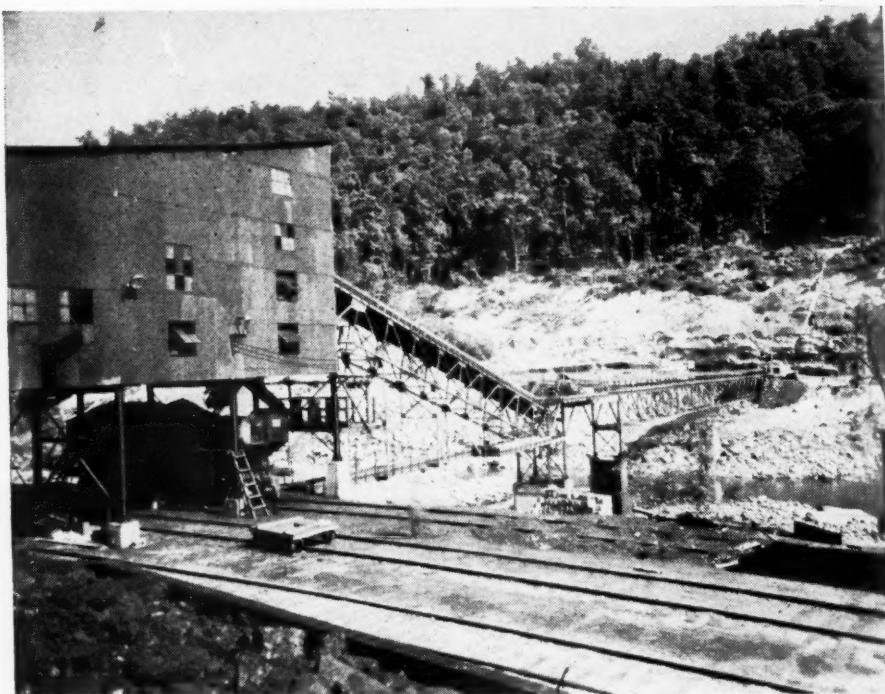
Conveyors Used Throughout at Richwood-Sewell Mine—Seam and Grade Variations Favor Hand Loading—Average Output 9.1 Tons per Man Employed and Over 15 Tons per Face Man—Conveyors Handle Supplies

By J. H. EDWARDS  
Associate Editor, Coal Age

IN COMMON with other new mines in Nicholas County, West Virginia, Sewell No. 1 of the Richwood-Sewell Coal Co., one of several in the charge of J. A. Lewis, field manager for Oglebay, Norton & Co., Cleveland, Ohio, with coal-mine operating offices in Charleston, W. Va., is equipped with conveyor haulage. Although the average seam thickness is 5 ft., hand-loading onto the conveyors in both development and rooms is the practice because thin areas are encountered. A rectifier substation is responsible in part for a low power consumption per ton of coal shipped. Belt and chain conveyors are used for all deliveries of timbers and miscellaneous materials and supplies to the working places. Firm sandstone top and hard sandstone bottom, no continuous partings and a high-quality Sewell coal with low inherent ash are natural advantages.

Sewell No. 1 is opened on Gauley River and loads to the Grafton Branch of the Baltimore & Ohio R. R. The extension from Curtin, six miles long, was completed in 1944. Looking downstream, the railroad and four-track tipple are on the left side of the river and the mine portal is on the right. This opening is through the outcrop at an elevation 45 ft. above mean low water level of the river. The outby section of the main-haulage belt conveyor extends straight out across the river, where it discharges to another belt that elevates to a steel tipple equipped to prepare and size four grades of coal.

The lease includes approximately 4,000 acres of Sewell seam in one block, almost square. So far as is known, from drillings and present development, the ordinary range of thickness varies from 3 to 6 ft. Although the seam is generally level, local dips are common. At the time of this writing the main entry had been developed to a point 1,000 ft.



Richwood-Sewell tipple and outby section of the main-entry conveyor from the portal across Gauley River to the elevating belt.



The main belt conveyor, at seam level, is 45 ft. above low water in the Gauley River.

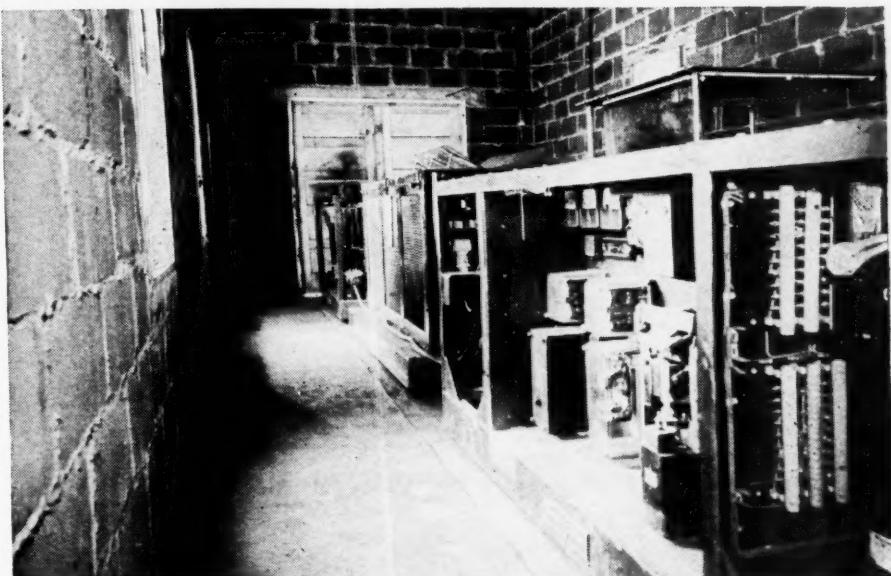
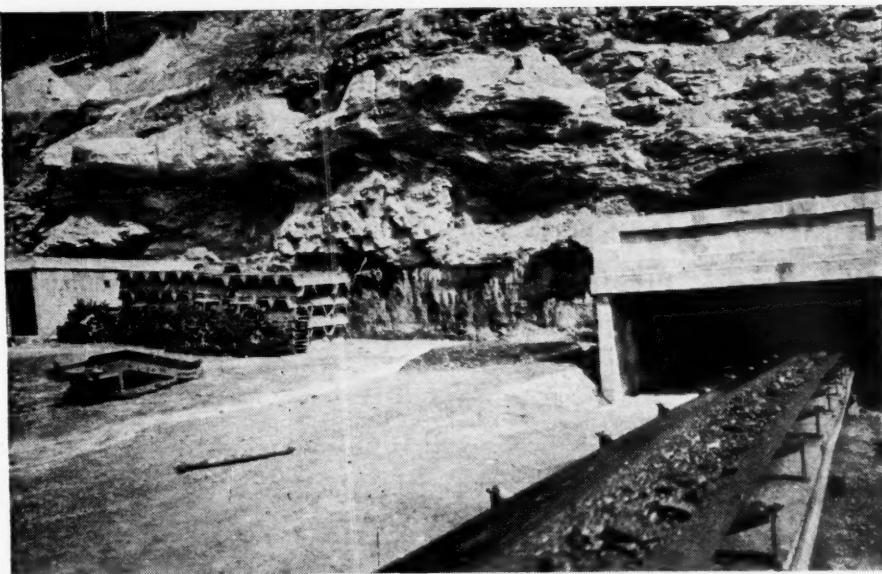
Seam thickness at this point is 5½ ft. Piled near the fan house at the left are chain-conveyor parts awaiting installation.

from the portal. In this development local rolls and displacements were encountered, slowing the advance. To maintain tonnage and necessary development, the No. 1 and No. 2 bleeder rooms parallel to the main were advanced, making it possible to develop butt entries ahead of the main entries.

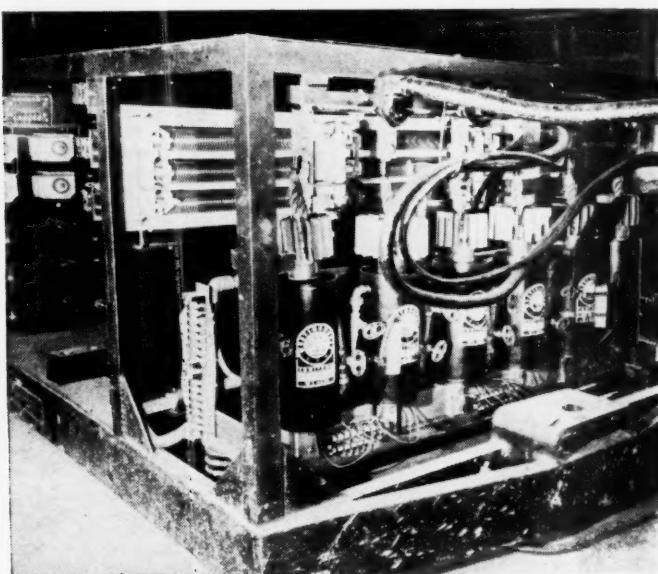
Of the six parallel headings constituting a main entry, four are side by side and two, which are the bleeders, are separated from the group by 300-ft. barrier pillars. Room entries consist of double headings, one for the belt and the other for an aircourse. All headings are 18 ft. wide and the rooms are 50 ft. wide on 60-ft. centers. Room depth is 300 ft. Face conveyors of the chain type, 31 ft. long, are used in the rooms. The room conveyors, also chain type, discharge directly to the belt.

Equipment in use underground at the time this article was prepared included six Jeffrey 35BC mining machines using star bits, six Jeffrey 7A drills using Coalmaster augers and bits, three Jeffrey 61HG face conveyors, six Jeffrey 61AM room-type chain conveyors, two Jeffrey 52B belt conveyors with 30-in. Manhattan 2x2 Lamicord belting, one Schramm 60-c.f.m. Model 105 compressor with Dake Lugger air hoist for moving it, one Brown-Fayro spotting hoist for moving conveyor drives and three Marlow EL-27 self-priming centrifugal pumps with 3- and 5-hp. motors.

Sprays are used at all transfer points and the water supply, at high pressure, is furnished by a Dayton-Dowd reciprocating pump located on the surface and



The rectifier is on three 42-in.-gage mine trucks but is installed outside.



Left—This cinder-block building, 12x30 ft. inside, houses the sealed-tube portable rectifier. On the poles are mounted metering transformers and an oil circuit breaker. Tripping relays and meters are in the boxes. Right—Sealed tubes of the portable ignition rectifier.



T. E. Johnson (right), secretary-treasurer, Northern West Virginia Coal Operators' Association, and T. T. Rees (left), president, Tioga Coal Corp., drop in for a chat with James Savilla, superintendent. They stand by that portion of the main belt conveyor across the river.

Center—Belt-conveyor equipment includes 5,000 ft. (with 10,000 ft. of belting) in use underground at the present time.

pulling water directly from Gauley River.

Three of the mining machines are used in headings and three in rooms. Three to four men work in the headings and four to five men in the rooms. Operation is on a two-shift basis and the total production per day is 550 to 600 tons. Face men average over 15 tons per manshift, material deliveries and conveyor moves included. The total number of employees at this time is 60. While the mine efficiency reaches peaks of over 10 tons per manshift, the average is 9.1.

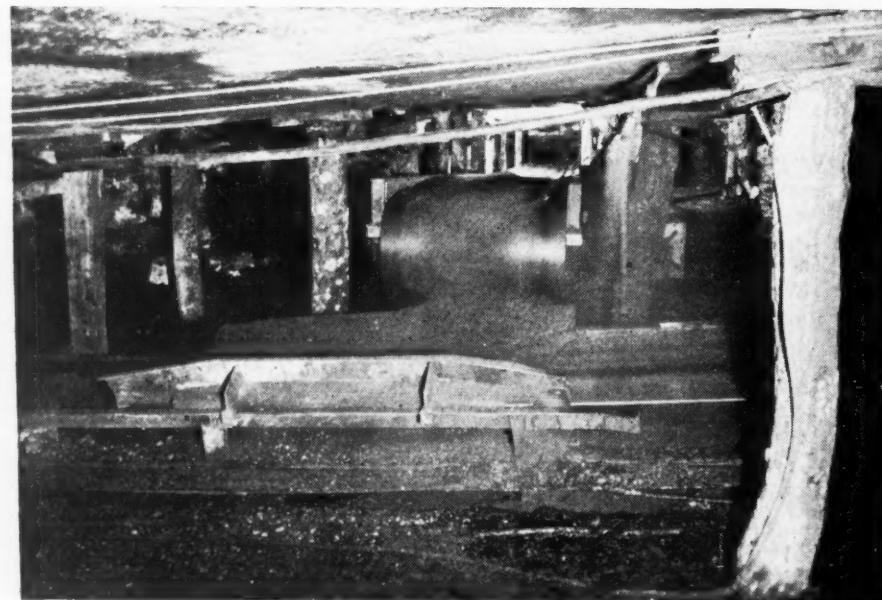
The efficiency represented by the preceding figures are credited to care in fitting equipment to conditions and to the efficiency of the supervisory force, which has been trained for a number of years in high productivity from mechanical underground equipment, especially chain and belt conveyors. James Savilla is superintendent of this plant, Okey Johnson is general mine foreman, F. E. Hill is chief electrician, and P. W. Bright is chief clerk.

A major problem in the field is the lack of experienced coal miners, especially men acquainted with mechanized mining. To obtain good results it is necessary to train each employee in his part of the work.

Shooting is done with du Pont Monobel C permissible. Three shotholes are drilled in an 18-ft. heading and five in 50-ft. rooms.

Air is conducted to the face by line brattices in both headings and rooms. Little or no gas is encountered. Through the use of the line brattices the smoke is cleared rapidly after a shot. Breakthroughs are regularly driven 60 ft. apart. In a few places, however, they are spaced 120 ft. with special permission from the State Department. The fan serving for the present is a 5-ft. axial-flow unit installed in a fireproof building.

Timbers and materials are transported into the mine by the face crews at the beginning of their shifts. An outside



First left belt discharging to the main belt at a point 600 ft. in from the portal. The main entry pitches 8 percent at this point.

Ready to sump in with a shortwall machine and cut an 18-ft. face where the coal is 51 in. thick. Both the top and bottom are hard sandstone. A chain conveyor shows in the foreground.

Center—Loading in a heading where the coal is 48 in. thick. The absence of partitions and a standstone top and bottom make it practically impossible for any extraneous matter to get into the coal.

or yard crew loads the material on the belt at the portal ready for the shift. The face men take off the materials at the transfer points and during this reversed operation of the belt a man is stationed at the end to remove material left on the belt after the face crews have filled their needs. Chain conveyors also are reversed for carrying supplies in by the belt to the face.

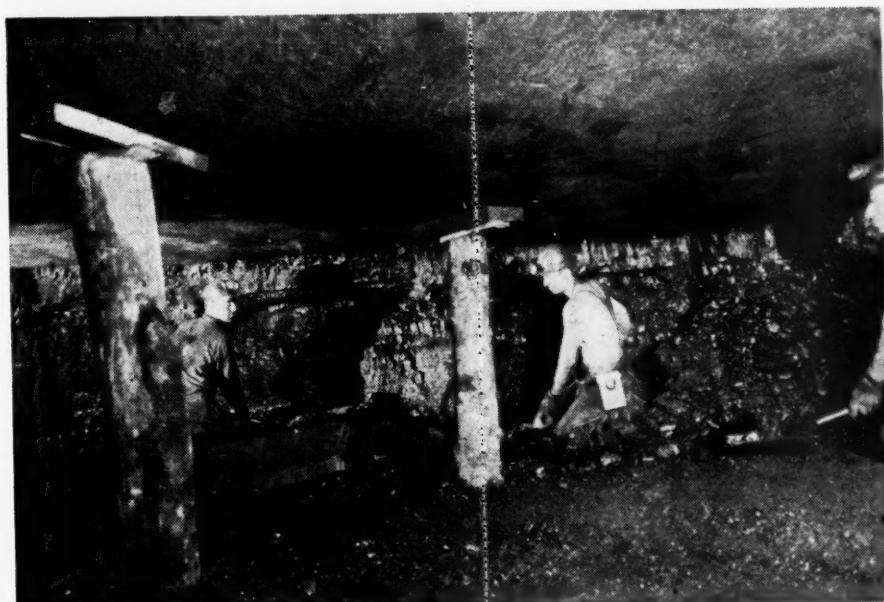
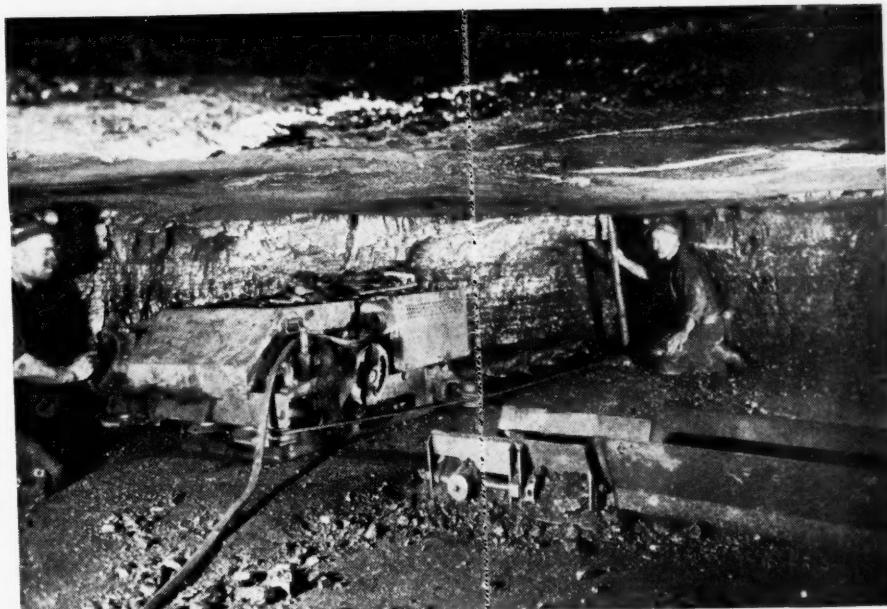
Underground power supply to all equipment is 250 volts d.c. Power is purchased from the Monongahela West Penn Power Co. and the conversion is handled by a Westinghouse 300-kw. sealed-tube portable ignitron rectifier. It is mounted on three 42-in.-gage trucks and installed on rails in a 12x30-ft. cinder block building outside near the belt portal. The three-phase Hipersil transformer is on the center truck. During the six-months' period preceding this writing the power utilization was 3.8 kw.-hr. per ton.

The main entry belt extends approximately 350 ft. from the portal on a steel bridge over Gauley River to the preparation plant. This four-track steel tipple, rated at 150 tons per hour, was built by Fairmont and used previously for a short time at another mine. It has two loading booms with picking-table sections. Purchase and installation of this available tipple was a war construction measure and the original planners of the mine expected to replace it later with one of larger capacity. The railroad siding for the plant accommodates 65 cars.

A yard has been graded near the portal ready for permanent service buildings. To date the management has gotten along very well with small temporary wooden buildings for the main office, supply-room shop and lamphouse. Cap-lamp equipment consists of 75 Wheat lamps and self-service charging racks. No miners' houses have been built on the property.

New welding equipment for the temporary shop consists of a General Electric 200-amp. 220-volt a.c. unit.

Looking across the belt at the 60-c.f.m. compressor driven by a 25-hp. motor and equipped with an air hoist (right) for moving.



# MODERN LABORATORY

## Handles Indiana Coal Testing Work

Built to Serve Members of the Indiana Coal Trade Association, New Laboratory at Terre Haute Is Equipped for Both Coal Testing and Research—Special Sampling Truck Available for Work at the Mines

TO SERVE the coal-testing and analysis needs of the members of the Coal Trade Association of Indiana, a modern laboratory has been built for operation by a subsidiary—Coal Laboratories, Inc. Coal producers holding membership in the association produce over 90 percent of the Indiana output, which in 1944 aggregated over 28,000,000 tons. The new laboratory, at 1240 Hulman St., Terre Haute, Ind., is housed in a modern 35x100-ft. one-story brick building with basement.

Samples of coal to be analyzed at the laboratory are delivered by the mines or the work of taking the samples is performed by the laboratory. In the latter case, a special truck equipped with all essential crushing machinery, shaker screens and other facilities is used.



Serving Indiana producers, this new coal-testing and research laboratory at Terre Haute measures 35x100 ft.



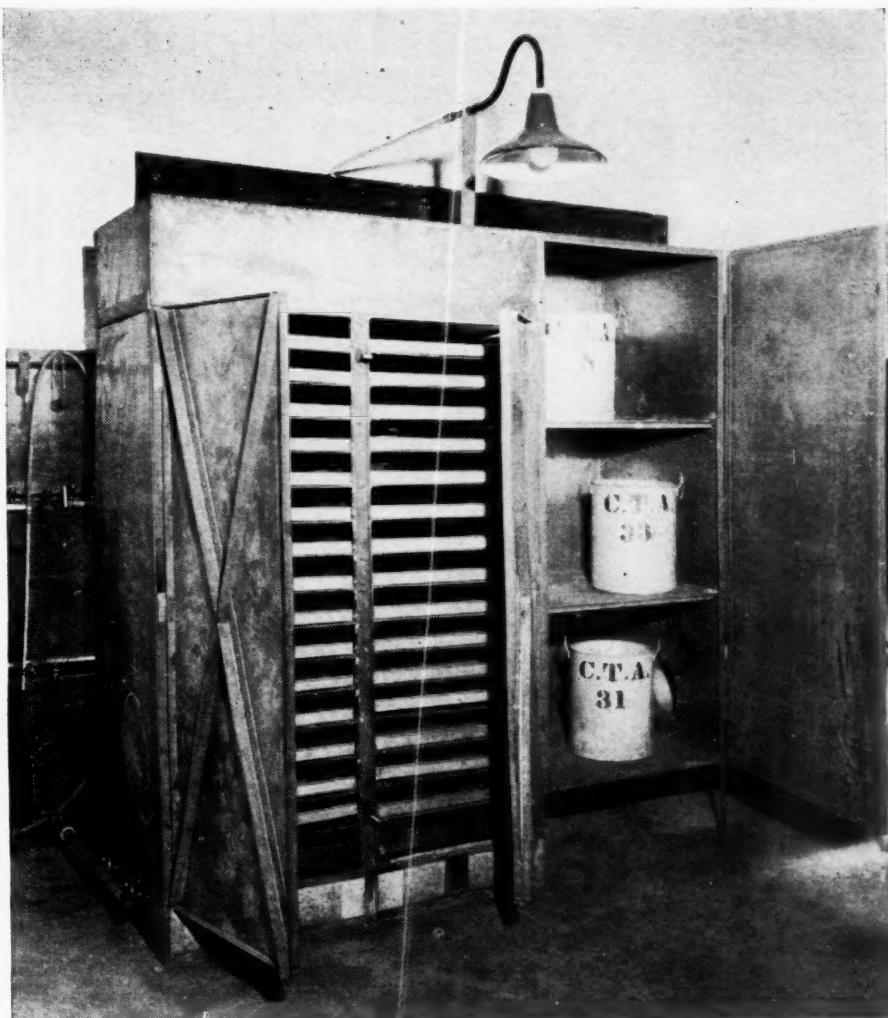
The main room contains both oven and furnace equipment in addition to a battery of potentiometers for control and records.

Where the quantity of coal included in the sample is large, the facilities of the truck are ideal in expediting the taking of samples.

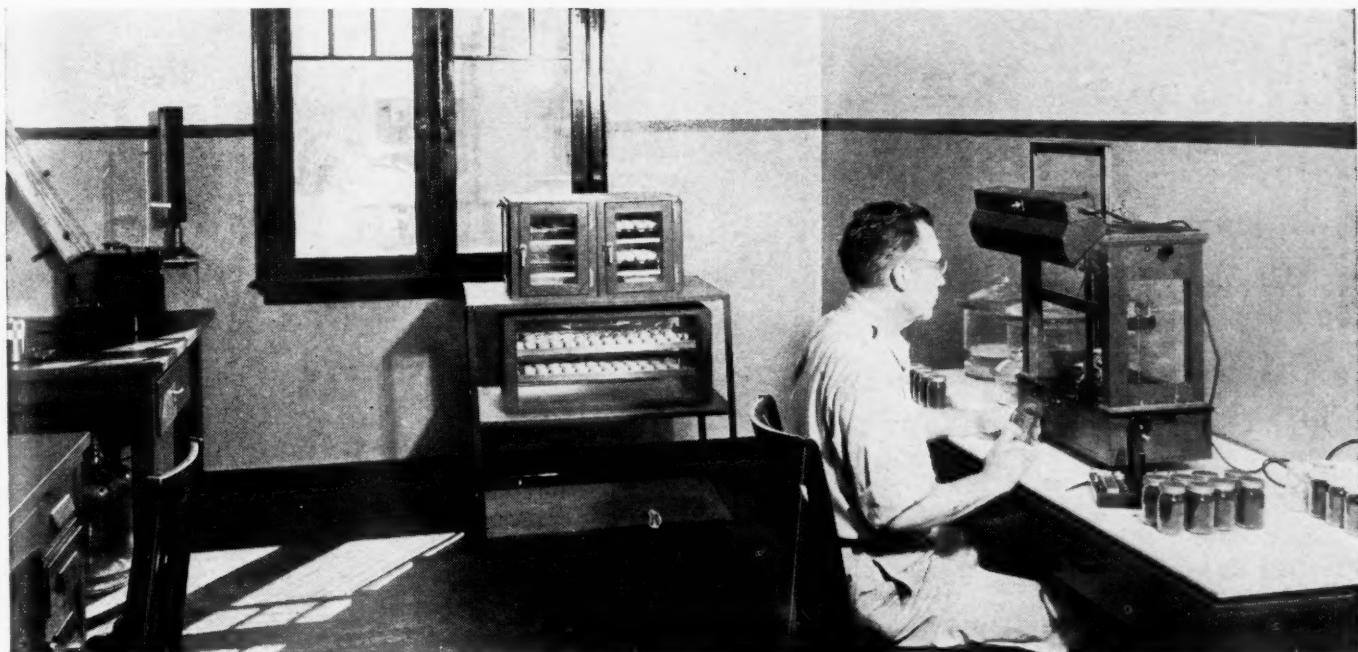
The rear portion of the laboratory building is devoted to preparation, crushing and grinding equipment, together with a specially designed and constructed dryer and other facilities essential to a modern coal laboratory. An efficient ventilating system has been installed to assure ideal working and safety conditions. Ample space is available for storage of the airtight sample containers that are used to insure preservation of moisture contents of coal samples. The gas-heated dryer has a capacity of 800 lb. of coal and is equipped for forced-air circulation. One section of the dryer has sufficient space for the drying of the sample containers.

#### Special Desiccators Used

One room houses a Denver fusion furnace and optical pyrometer and a mortar grinder used to grind ash to a uniform consistency. Another room has been set aside for the Christian Becker balance, which has the latest "chainomatic" arrangement and magnetic damper. Weights used are certified by the U. S. Bureau of Standards. Also in this room is a plain-jacket Parr calorimeter with self-sealing oxygen bomb. Moisture desiccators especially designed and built by the laboratory and placed on a caster truck are located in this room. Another room houses a Hardgrove grindability machine, additional



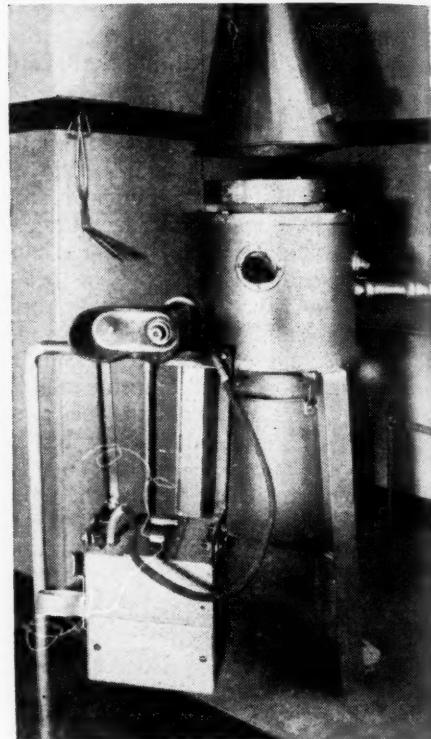
This special gas-fired air-conditioned drying oven also has space for drying containers used in sampling operations.



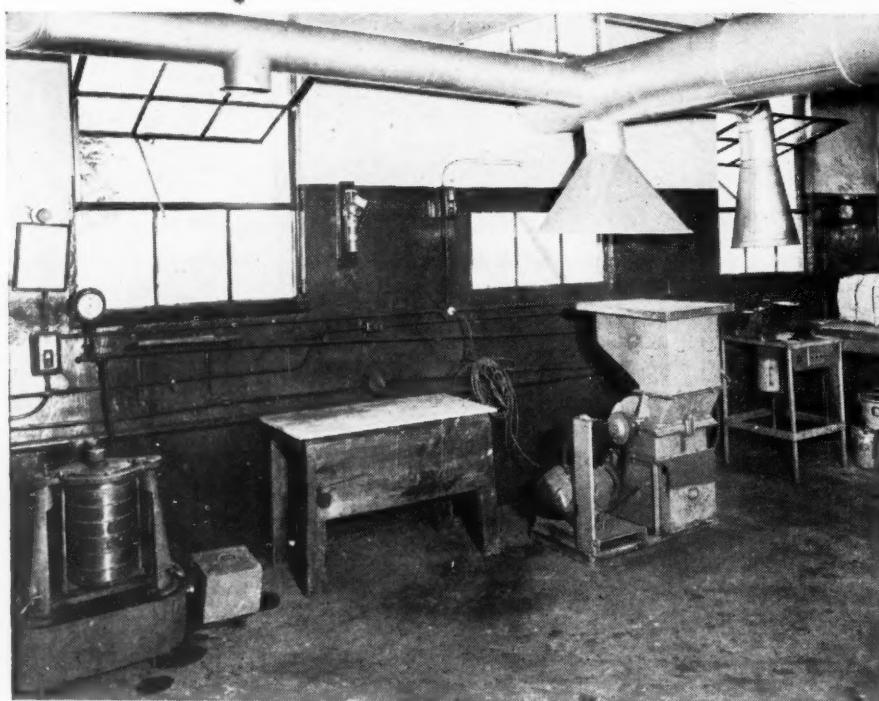
Balance, moisture desiccator and calorimeter equipment available for testing and research work carried on by Coal Laboratories, Inc.



This special truck is available for taking mine samples for later handling by laboratory.



A fusion furnace with optical pyrometer is included in the laboratory facilities.



Part of the preparation, crushing and grinding equipment installed at the laboratory.

laboratory equipment and storage space for supplies.

The main room of the laboratory contains the major analytical units, consisting of one Isotemp utility oven, an electrically heated moisture oven built and assembled in accordance with plans of the U. S. Bureau of Mines and capable of making 84 determinations at one time, two Fieldner furnaces, a three-speed hot plate, two Hoskins furnaces,

modern hood and ventilating equipment, caster truck for moisture desiccators and a modern filter table. A feature in this room is a battery of five Brown potentiometers used with the muffle furnaces, volatile furnaces and moisture oven. These potentiometers not only indicate the temperature of the furnaces and ovens but control and record the temperature maintained at all times with the "batch" system in operation. Ample

work counters and cabinet space are provided. Adjoining the analytical room is the business office.

In addition to making such analyses as are requested, the laboratory technicians are in position to carry on various research activities of interest to Indiana coal producers.

#### Service Improved

While Indiana coal producers have for many years engaged the services of commercial laboratories and some operate their own laboratories, the establishment of the new institution offers many advantages to operators and places at their disposal a complete modern laboratory to serve the industry accurately and with dispatch in a broad field of analytical study of Indiana coal.

John M. Sanford, graduate chemical engineer of Rose Polytechnic Institute, is manager-chemist of the new laboratory.

Officers and directors of Coal Laboratories, Inc., are: C. C. Lydick, managing director, Indiana Coal Trade Association, president; Hugh B. Lee, vice president and general manager, Maumee Collieries Co.; B. E. Lundblad, vice president and treasurer, Central Indiana Coal Co.; and Henry P. Smith, president, Princeton Mining Co. and the Black Hawk Coal Corp. J. A. Thompson, statistician of the Coal Trade Association, is secretary-treasurer of the laboratory corporation.

# LEATHERWOOD MINE

## Being Developed Into Kentucky's Largest

Located in the Center of a 45,000-Acre Coal Field, Blue Diamond's New Operation Is Scheduled for an Ultimate Output of 2,000,000 Tons Annually—Temporary Tipple Now Handles 1,500 Tons Daily in Development

USING temporary equipment for the present, the new Leatherwood mine of the Blue Diamond Coal Co., planned as the largest non-captive producer in Kentucky, is now shipping 1,500 tons per day from underground mining although development of the property started from scratch in July, 1944, when the area was a true wilderness ten miles from highways and railroads. Alexander Bonnyman, president of the Blue Diamond company, who explored the Leatherwood area with a mountain guide and two of his associates in 1918-19 and first planned its development in 1919, has given much of his time during the last two years to the planning and

engineering of the operation. Before his connection with the coal industry he built over 100 steel bridges for southern railroads and for 45 years has been a member of the American Society of Civil Engineers. In addition, he is a member of several other engineering and scientific associations. The new mine is in the center of a 45,000-acre field estimated to contain 250,000,000 tons of recoverable high-grade coal in the 5-ft. Leatherwood seam, all lying above water level.

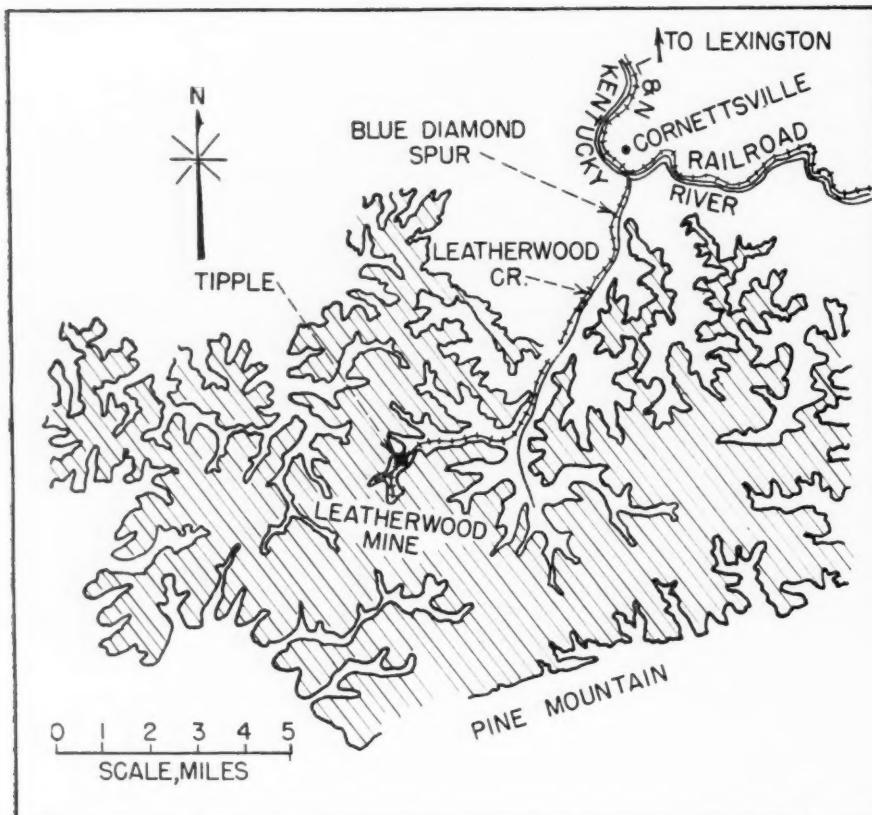
To reach the Leatherwood tipple and townsite the Louisville & Nashville R.R. built, at a cost of over \$2,000,000, 10.3 miles of main-spur track up Leather-

wood Creek from its main line at Dent, 17 miles from Hazard, Ky. The coal company is to have 34 miles of tracks at Leatherwood mine, in addition to the L. & W. main spur. This Leatherwood Creek spur, or branch, was opened for traffic Jan. 9, 1945, and the next day Leatherwood mine shipped its first car of coal, loaded through a temporary wooden chute.

The Leatherwood seam of coal, at the location where the permanent tipple will be built, is 120 ft. above the railroad tracks. This is the height contemplated as required for the permanent storage bin, tipple and preparation equipment. One-fourth of the cost of



The dump hopper for drop-bottom cars, retarding conveyor and temporary steel tipple show through the trees in the foreground. Grading for the plant, highway and railroad has changed the face of the valley. The spur at the left is a protection against runaways.



the main railroad spur was due to the plan to get the railroad up the creek to a place affording adequate tipple height for a large installation.

To provide ground room in the hol-

low for the six-track permanent tipple, a runaround track, a main track and a village light-surfaced road, in addition to the creek whose bed was changed, the coal company spent over \$100,000

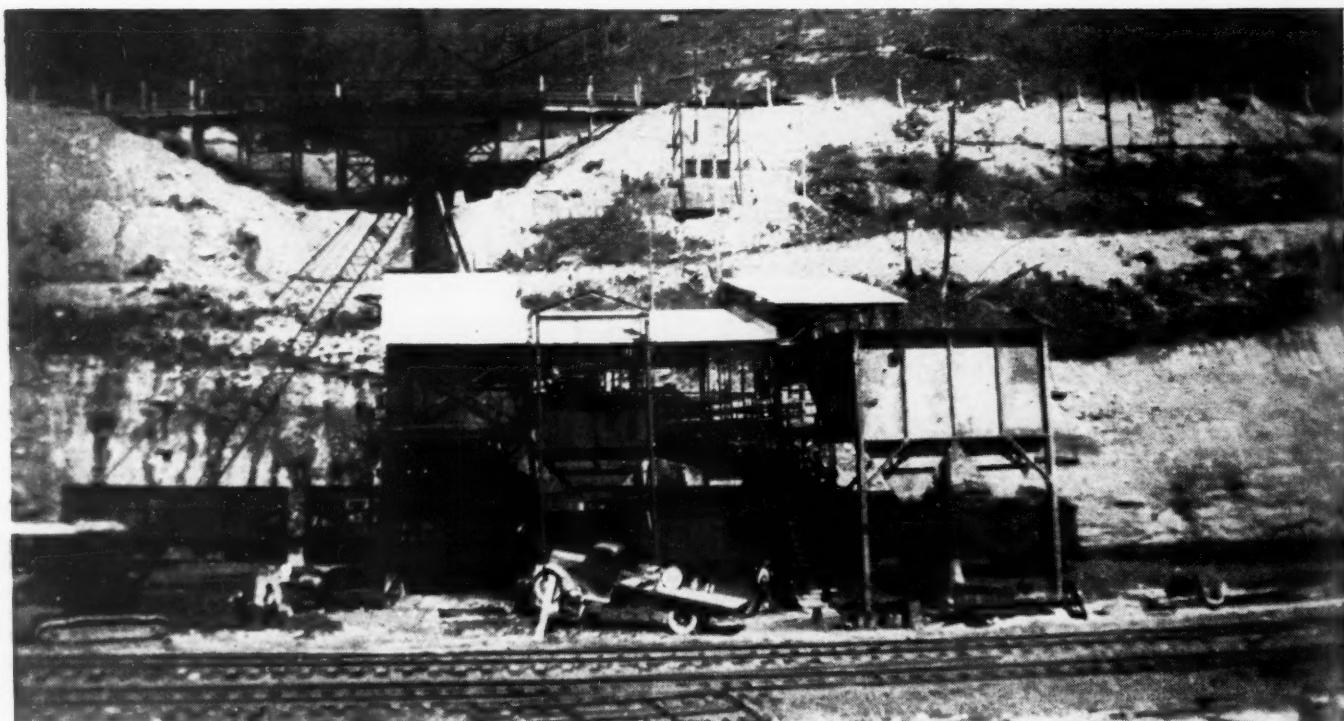
Leatherwood coal seam, in a 10x16-mile area in Harlan, Perry and Leslie counties, Kentucky. The permanent tipple at Leatherwood mine is to be built for 2,000,000 tons a year.

grading a large side-hill rock cut to a vertical height of almost 100 ft. In the hollow at the tipple location there will be no room for any other buildings. The main highway is up on the hillside above the coal seam.

The State, with federal aid, was expected to complete by this winter a first-class highway from Kentucky State Route No. 7 to Leatherwood and construction of this road will be continued beyond Leatherwood to connect with the Harlan area. Automobile travel into Leatherwood this winter will be in wonderful contrast to the driving through creek beds and mud holes that officials and workmen had to do last winter to get to the job.

#### Company To Build New Town

Leatherwood is in Perry County and about two miles from the common corner of Perry, Leslie and Harlan counties. In that vicinity the hills are not very steep and consequently the hill-sides afford good sites for building homes properly spaced and pleasantly situated in natural woods. Up to the time the data were gathered for this article seven permanent houses for officials and about fifty temporary houses,



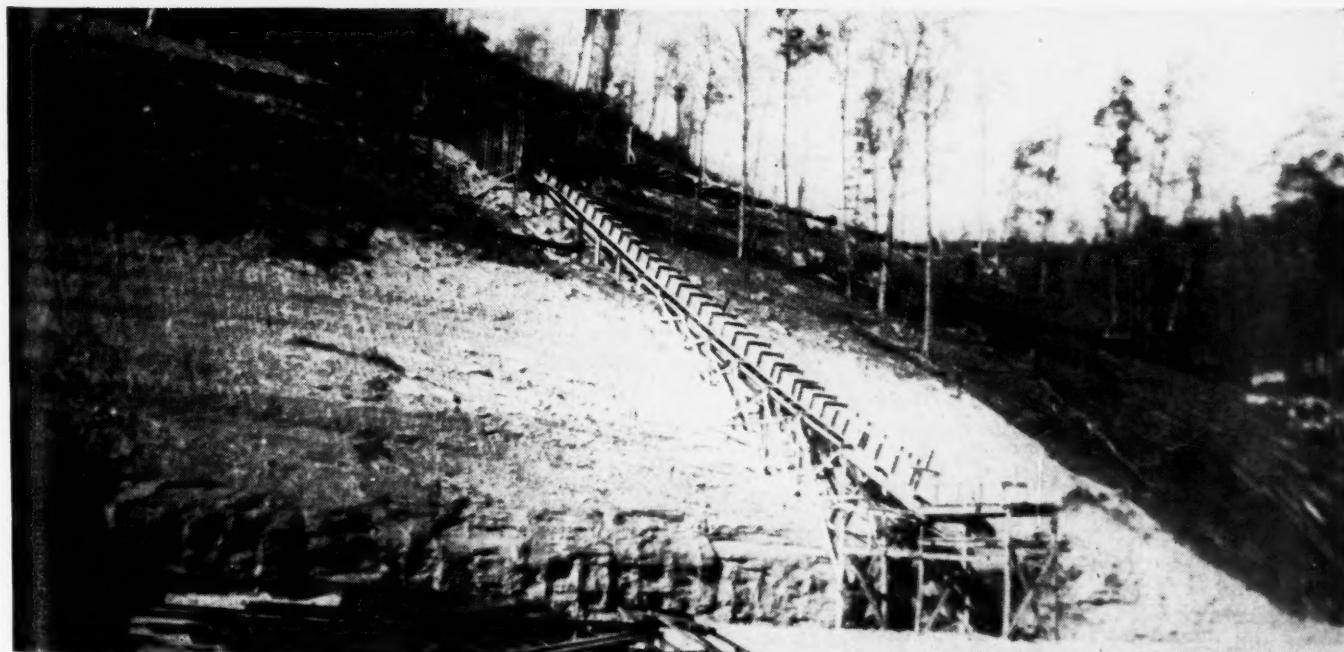
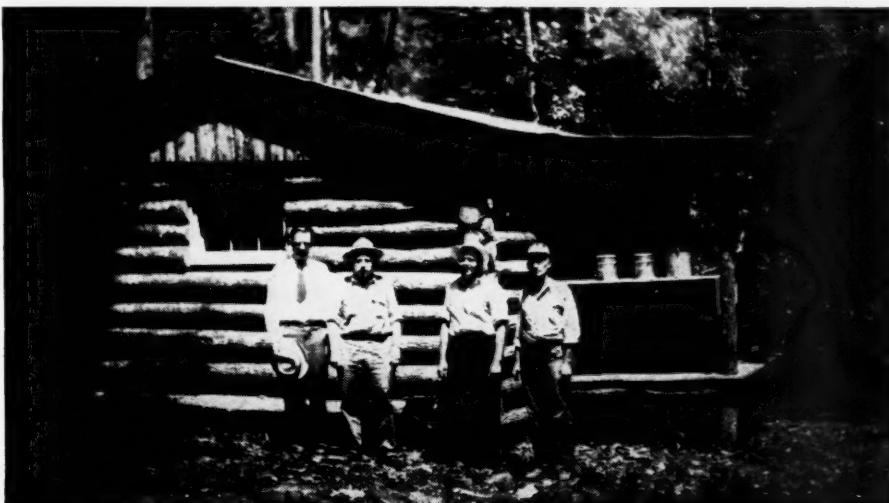
This tipple, moved from another Blue Diamond operation, is a temporary installation to serve until the permanent plant can be erected. It is now handling 1,500 tons daily and has handled 1,700.



Excavating for the tipple in September, 1944. Making the heavy side-hill cut and grading for the tipple and tipple tracks cost over \$100,000.

This first house in Leatherwood was built in one day. Entering the valley in a truck in July, 1944, the construction superintendent and engineers brought the windows, doors and roofing with them. John Mayhew, new superintendent of Leatherwood, stands second from the left.

First temporary chute awaiting completion of the railroad. Electric power (purchased) was turned on at Leatherwood Nov. 12, 1944, and the first mine car of coal was loaded the next day.





Temporarily housing the mine offices and store, this large native-stone building eventually will be made into a warehouse for mine supplies.

including bunk houses, had been erected. Ultimately the company will build a complete town to provide modern conveniences and amusements for several hundred families.

#### Steel Tipple Moved

The temporary wooden chute previously mentioned has since been replaced by a temporary steel tipple that would serve with credit as a permanent tipple at many mines. It is a four-track structure, complete with screening and preparation equipment, moved from the company's Bonny Blue mine, Bonny Blue, Va., which was worked out in June, 1944. That tipple, built by Link-Belt, was considered the best in the territory when it was erected at Bonny Blue. In re-erecting it at Leatherwood and making some small improvements in the original design the coal company has spent at least \$20,000.

The permanent tipple, plans for which are under way, will be built up the track 120 ft. from this temporary but efficient plant. Plans call for the permanent plant to have a capacity of 2,000,000 tons per year.

A large one-story building of native stone with steel roof trusses has been completed and is serving as a temporary office and retail store. At a later date



Seven permanent dwellings, all for mine officials, had been erected at Leatherwood up to Oct. 15, 1945. A modern town will follow.

when permanent office and store buildings have been completed the one now in use will be made into a permanent warehouse for mine supplies.

Drop-bottom cars transferred from another mine are being used until new cars of the same type but larger in size are purchased. Goodman G-20 shakers with duckbills are being employed for

entry development, with one Joy loading machine in mining rooms.

C. B. Jackson, of Big Stone Gap, Va., is general manager of the northern division of the Blue Diamond Coal Co., which includes the new Leatherwood property. The superintendent is John Mayhew, who has been with the company for about 25 years.

# EXIDE-IRONCLAD POWER KEEPS SHUTTLECARS STEADILY ON THE JOB—ALL DAY LONG

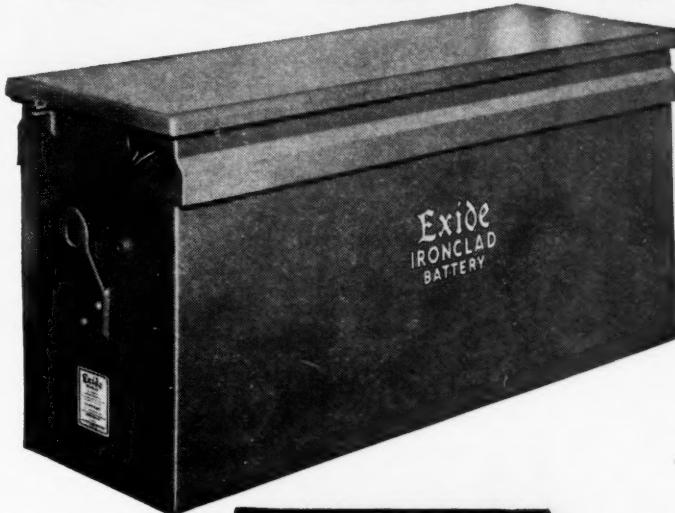


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If you have a special battery problem, or wish more detailed information, write to Exide and ask for booklet Form 1982.

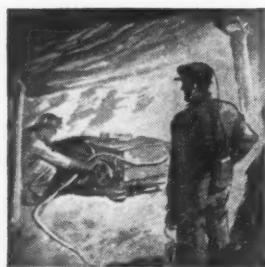
# POWER



**Exide**  
IRONCLAD  
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

COAL AGE • February, 1946



# The Foremen's Forum

## How to Post a Pitching Bed—Should Props Be Underset or Overset?

**Usually Sagging Causes the Roof to Travel Down Pitch More Than Floor and Then Posts Should Be Set With Their Tops Up the Pitch Instead of Perpendicular to the Coal Measure**

IN A PITCHING BED, supporting props, though wedged between roof and floor and perpendicular to both, are essentially unstable, being held in position at their upper ends solely by the friction between the roof and the wedge and between the wedge and the post. At the bottom, they may be secure, being sunk a short distance into the floor. They have also the violence of shots with which to contend.

Both gravity and the shot coal tend to force out the posts. So it is customary to cut the props of such excessive length that, with the addition of the thickness of the wedges, they will be so long that they will jamb, as the roof, starting to sag, travels down the pitch and as shots, by striking the posts, threaten to dislodge them. The posts, or props, are then said to be "underset."

**Leading and Laggard Roof**—It usually has been assumed without apparent justification that only the roof moves, and that the roof when it travels always moves down the pitch where a vacancy exists into which it can sag, even if only a little way. The situation, however, has been found to be

more complex. Strange to say, the floor, so usually thought stable, may sometimes slip or be pushed down the pitch faster and farther than the roof, which may be said, in one case, to "lead" the floor and in the other case to "lag" behind it. Thus the roof may be described at one time as "leading" and at another as "laggard," as in

investigate this movement, found that in places the roof appeared to be lagging—that is, to travel up the pitch relative to the floor. In consequence, undersetting would make the equilibrium of the post in such limited cases only the more precarious, for the roof would make the post revolve up the pitch with the foot of the post as a tilting center, thus freeing the wedge at the top of the post. In contrast, if the roof traveled downhill, it would force the prop and wedge into a space too narrow for them and so tighten the grip of the post on the floor and roof.

**Leading Roofs**—The observations of Mr. Vallis were of a varied character. In one mine, where the mining operations advanced up the pitch and the face of the coal paralleled the strike of the coal measure—that is, was level, in short, in a rising place—he found that both the roof and the floor

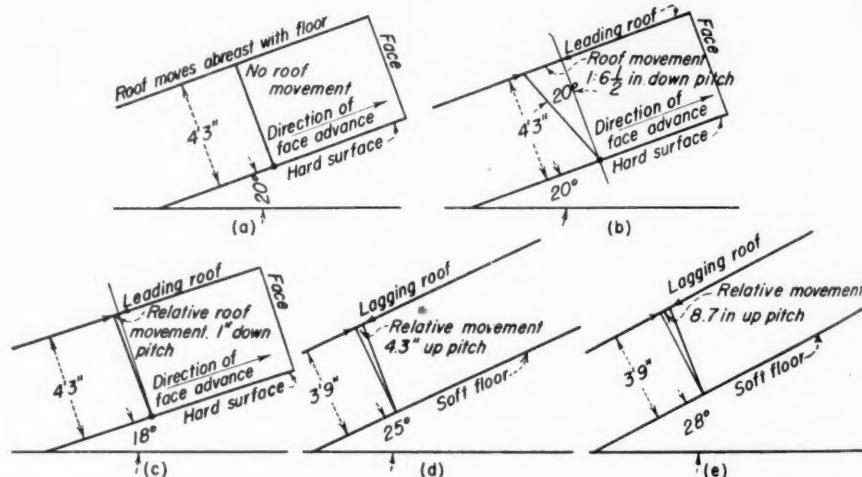


Fig. 2—Illustrating how some roof moves down the pitch more, and some less, than the floor. When the part of the floor on which the prop actually rests is quite soft, the floor seems to outstrip the roof in its downward travel, and the foot of props slides down with it, just as a man's foot slides on a steep pitch with the soft or greasy surface on which it may happen to rest, and his head falls back and he has a spill. With a hard floor he has a better footing, as also does the post.

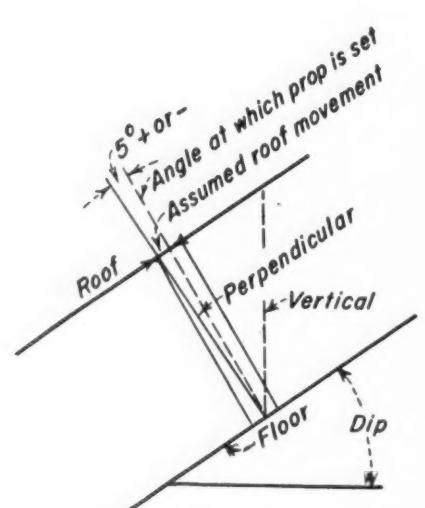


Fig. 1—Method usually adopted in posting a pitching place.

Figs. 1 and 2. Sometimes it may neither lead nor lag, but travel abreast of the floor. Use of these expressions clears the air of any suggestion as to the direction in which either roof or floor actually travels or how it happens that it does so travel. It does, however, express somewhat clearly the relation between the movements of the top and bottom, which is the real consideration when studying prop stability.

**Roof Lags Behind Floor**—In England, E. H. Vallis, appointed by the North Staffordshire Institute of Mining Engineers to

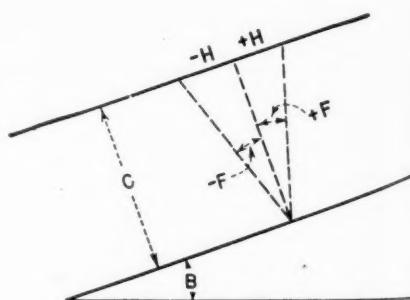


Fig. 3—Key to table.

# Thermoid

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A modern jack-hammer crew gets things done in a hurry with Thermoid Air Hose.

**Y**OUR business may never use air hose. Nevertheless, it should interest you to know that Thermoid has developed air hose that stands up better against heat and oil... to pulsating pressure... to cuts and bruises... to the abrasion of being dragged over jagged rocks.

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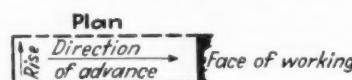
**HOW ROOF MOVES RELATIVE TO FLOOR IN RISE WORKINGS:  
FACE LEVEL PARALLELING STRIKE, PLACE ADVANCING UP PITCH**

(Letters that head column refer to Fig. 3)

Posts, in these three cases, should be underset



**HOW ROOF MOVES RELATIVE TO FLOOR, SIDEHILL WORKINGS:  
FACE DIRECTED STRAIGHT UP PITCH, PLACE ADVANCING ON LEVEL**



(Letters which head column refer to Fig. 3)

Place	Dip Deg.	Bed Thickness	Kind of Roof	Floor	How Much Point in Roof Shifted Relative to Point in Floor		
					Deg.	Direction	Ft.
A (a)	20	4' 3"	Fairly strong shale	4 in. hard soft beneath	Normal	Abreast	0.00
(b)	20	4' 3"	Fairly strong shale	4 in. hard soft beneath	20 deg. to dip of normal	Leads	-1.55
(c)	18	4' 3"	Fairly strong shale	4 in. hard soft beneath	1° 20' to dip of normal	Leads	-0.10

in one place either moved equally or possibly did not move at all; see Fig. 2 (a). In another place in the same mine, the roof moved 20 deg.—see Fig. 2 (b)—to the dip of normal, relative to the floor; that is, the roof's surface moved down the pitch more than the floor. As the thickness of the seam was 4 ft. 3 in., this represented a movement of 1 ft. 6 1/2 in. (1.55 ft.). The dip of the seam was 20 deg. In another instance, that dip was 18 deg. and the roof traveled 1 deg. 20 min. to the dip of the normal; see Fig. 2 (c). As the seam thickness again was 4 ft. 3 in., this represented a roof movement of a little over an inch (0.10 ft.) in excess of the floor movement. In these instances, undersetting was well justified.

Where roof and floor moved equally the movement was so small that undersetting would not be needed but would do little harm. Where the roof moved an inch farther than the floor, the undersetting would still not be essential but would serve as a factor of safety, and where it moved 18 1/2 in. the prop would become overset 14 1/2 in. and doubtless would be dislodged. No original undersetting could save such a desperate situation, unless the wedge and prop failed to follow the roof movement in its early stages, as is not impossible.

**Soft but Inextrudable**—In these instances, the roof was a fairly strong shale and the upper 4 in. of the floor was hard with soft

material thereunder. Perhaps both the roof and the floor acted as if they were hard. A soft stratum is—like water—incompressible and, being in confinement, if only temporarily, cannot be readily extruded. Note carefully that these workings were traveling in the American way, up the pitch, but they were longwall workings, not breast-and-pillar operations. Regarding this more will be said later.

**Laggard Roofs**—But, as already stated, there were instances where the roof lagged behind the floor in its movement and actually appeared to be traveling backward, but doubtless was not, and these movements pose a difficult problem. These mine workings were advancing parallel to the strike with the face directly up the pitch. In one case, the floor outstripped the roof 4.3 in. (0.36 ft.) and in another 8.7 in. (0.73 ft.). This would render the posts useless. As in these cases the floor was soft, Mr. Vallis suggests that the softness of the bottom in Faces (d) and (e) in the table account for this condition, and this same anomaly seems to have been noted also in the anthracite region. But Pennsylvania anthracite floors usually are hard and probably, in general, undersetting gives favorable results.

In other cases of longwall workings that were advancing along the strike, when the floor rock was hard, even when the floor at a point 4 in. below its surface was soft, the roof appeared to travel down the pitch more

than the floor. It seems, therefore, that the evidence favors the dictum that with a floor having a hard surface, the post should lean up the pitch at the top.

**Less Sag With Rooms**—One would be disposed at first sight to think that, as the British have longwall that brings heavy stresses down the pitch, the posting should be different from that in America, where, with room-and-pillar, the stresses are less severe, so much coal being present to keep the roof in place. The sagging being less, the roof would travel less down the pitch than in England and that would increase the importance of the downward movement of the soft floor. Thus, one would be disposed to believe that in the breast-and-pillar workings of the United States, undersetting, though helpful, should be less generally advantageous than in Great Britain.

Greater depth in Staffordshire mines increases sag and also increases pressure on the clay bottom, and these are actions that cause both roof and floor to travel down hill and therefore may prevent any differential movement of roof and floor.

Removal of rock at the heading does not appear to be the cause of the bottom moving down more than the top, either in room-and-pillar or longwall workings. The action appears one dependent on the softness of the top of the floor of the coal bed. If the top of that floor is soft, the top of the post should be "overset" from below and leaned—that is wedged—a little down the pitch so that the movement of the floor will tighten the post, whereas if the top of the floor is hard, the top of the post should be wedged down the pitch and the post should be leaned up the pitch, so that the movement of the roof's undersurface will tighten the post.

## Always Do Something About It

When an accident occurs, whether it kills, maims, breaks equipment or does no harm at all to anyone or anything, do something about it. It is your warning; heed it. Unless you do, you will have a bad accident record. The conditions that will cause accidents are not always visible, obvious or calculable, but whenever an accident illuminates them, register them in your mind and find how to deal with them. No teacher is better than experience, but it can be overlooked and its value lost if you don't do something about it promptly.

Try to find what you did that was wrong. The other fellow perhaps made nine-tenths of the mistake but your tenth may have completed the train of causation of the accident without which it would not have happened. You may not be able to train him; he may be too dumb; but you are rated as intelligent. This is why you have been accepted as a supervisor. You can take yourself in hand, and you can do something to make it difficult for him to make the blunder that injured him or that wrecked the equipment. Once is too often; twice is criminal. Be sure it happens but once or not at all!

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For today's and tomorrow's needs of the mining industry, Rome Cable produces wire and cable products of long-proved dependability. In design and construction they embody the practical application of enlightened research and manufacturing skill. Conductors possess in full measure the electrical properties required for specific use of the product. Insulations and coverings are developments of many years' experience and provide a tough durable flameproof covering.

Our line includes:

Parallel Duplex Mining Cables  
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Portable Power Cables  
Central and Signal Cables  
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RESISTS BOTH  
TENSION  
AND TORSION

ROME "60"  
IS  
FLAMEPROOF



ROMEY SAYS:

"It's plenty tough  
enough to perform  
the roughest job in  
the mine."

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There's "extra mileage" built into every inch of this heavy duty cable, which is recommended for electric locomotives of the gathering reel type. Doing the roughest, toughest job in the mine, the famous Rome "60" takes it on the chin day and night for months and months of continuous service.

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# State-Board Questions

## Mine Foremen, West Virginia

**Q.**—Why is it dangerous to "shoot coal off the solid"?

**A.**—When coal is "shot off the solid" (which means that coal is shot without any preliminary cutting of a kerf) the work required of the shot is increased immensely and the charge used to do the work has to be made much heavier than would be necessary if a preliminary cut in the coal were provided. When a cut, however, is made under the coal, at the base of it, over it, or vertically or horizontally through it or beside it, the coal can be pushed by the explosive in either of two directions: not only forward, but up, down or sidewise, as the case may be.

**Heavy Shots Necessary With Solid Shooting**—When the shot thus can be made less forceful without failing to accomplish its end, the coal is not so badly broken, and there is less likelihood that flame safety or other lamps will be blown out and induce men to relight them in methane, with risk of an explosion, or to make men travel in the dark to points where it is safe to relight them. Both methods of reestablishing the lights are hazardous, especially in methanous mines. Heavy shots will raise more coal dust from the floor than light ones, if the dust is there, and some always is present.

**Higher Pressure With Heavier Shots**—With heavy charges more flame will emerge from the mouth of the borehole in case of a blowout shot. Such a shot, if more than usually violent, will make more pressure in front of the face and such pressures increase the activity of gases, thus increasing their explosibility. In a gas engine, the gases may be pressed to such a degree that they will fire prematurely or even detonate. This demonstrates that pressure definitely aids combustion, which is just what heavy charges tend to assure and just what is fatal with regard to blowout shots. More poisonous nitrogen fumes are emitted when more or heavier charges are used, as in shooting off the solid.

**Damage to Roof and Sides**—Moreover, heavy shots damage roof and sides, creating a hazard from such falls and an electrical hazard, because electric wiring cannot be safely supported in damaged strata. This is particularly troublesome in narrow work, where, even with preliminary face cutting, the shots have to be forceful, and still more forceful where such cutting is omitted.

**Less Stemming for Heavier Shots**—As more explosive is used, less space is available for stemming; thus the shot is less closely confined than it is when preliminary

cutting lifts some of the burden required of the shot. As a result, not only is the shot heavier but the stemming is less adequate, and blowout shots result. However, there are short plugs that will hold the explosive even if other stemming is omitted.

**Bleeding Off Methane**—Shooting off the solid has another disadvantage in methanous coal beds. When a preliminary cut is made in the coal, the escape of methane from the coal is facilitated, and the shothole is less likely to be filled with methane as rapidly as it is if there is no other and more extensive avenue for escape. Consequently, in solid shooting, if a blowout occurs, it is likely to emit more flame than one where a preliminary kerf has been cut. Where there is no such cut, all the methane enters the shothole on its way out and enough of it stays there to be possibly available for causing an explosion.

**Effect of Methane and Coal Dust**—To be wholly fair, one condition favored shooting off the solid: the fact that there were few fine fragments of coal on the floor or ribs to be lifted by a blowout shot, but a condition similar to the old conditions with regard to the absence of excessively fine dust and even superior to those conditions can be afforded by sedulously dragging these fine cuttings out of the cut and cleaning up the face, which, for greater safety, should be done before shooting. Piles of slack in front of the face about to be shot spell "danger."

**Q.**—Why is "cushioned shooting" dangerous?

**A.**—"Cushioned shooting" may be described as using for shooting a cartridge or cartridges in a borehole longer, or of larger diameter, than the cartridge or cartridges so as to lessen the shock of the explosion and to cause it to rend or split the coal rather than blast it, thus preventing an excessive percentage of the coal from being blown into relatively small fragments. This sometimes enables a permissible to produce as satisfactory a product as a slow deflagrating explosive.

**Coal Supplies the Non-Permissible Explosives**—The weakness of the cushioned blasting is that the shothole may contain coal dust and methane, explosive factors that are in no sense permissible. It may be possible to explode these explosive factors, which burn with a longer flame than permissible powders or even than black blasting powder, for air possibly is present in the borehole to permit of such deflagration. It is always questionable how much oxygen is present and how much methane. The entry of methane into the shothole under heavy pressure slowly drives out the air through the tamping or through crevices.

### Right Time to Fire

**Will the Methane Explode?**—If it could be determined how much oxygen and methane are present, one might be able to fire the shot at just the right time, where the methane would be in such large or small quantity that it could not explode, having either failed to reach, say, 2 percent or having reached a percentage of, say, 30, so that the methane will not explode. The only menace then will be coal dust. The limits, 2 and 30 percent, may seem respectively too low and too high and the range of explosibility too wide, but one should be on the safe side, for the timing of the shot is likely to be defective, and the limits established by the U. S. Bureau of Mines are for methane at atmospheric pressure and a relatively low temperature. The explosibility range for pressures and temperatures existing in a borehole when a charge is detonated may be much wider than from 5 to 15 percent, especially when the detonating violence of the explosive sets the molecules into rapid motion. Only by timing the shot according to the speed of evolution of methane could a degree of protection be afforded.

**Reduces Tamping Space**—The use of cushioned blasting involves the use of cartridges of small diameter, which will occupy a considerable length of shothole, or of larger cartridges with an air spacer, or

### Pros and Cons of Solid Shooting

#### (A) Dangers

- (1) **Heavier Shots Must Be Fired**
  - (a) **Extinguishing Lamps With Attendant Danger Especially in Methanous Mines**
  - (b) **Raising More Coal Dust From Floor**
  - (c) **More Flame From Blowout Shots**
  - (d) **More Pressure in Front of Face, Increasing Explosibility**
  - (e) **More Nitrogen Fumes Emitted**
  - (f) **Damage to Roof and Sides**
- (2) **Less Stemming Yet Heavier Shots**
- (3) **More Methane Enters Borehole**

#### (B) Advantage

- (1) **Less Coal Dust in Front of Face.**

## A MECHANICAL LOADER IS AS DEPENDABLE AS ITS WEAKEST PART

It's sound common sense to believe that Myers-Whaley, manufacturers of the Whaley "Automat", is the best source of supply for dependable "Automat" repair parts.

Rigidly controlled supervision of every part and detail that goes into a Whaley "Automat" insures against weak parts.

Constantly on guard for any "weak link", Myers-Whaley engineers insist upon precision workmanship in every big and little part that goes into an "Automat". Manufacture of every moving part, in our own plant, under the close supervision of our own engineers accounts, to a large extent, for the outstanding performance of the Whaley "Automat".

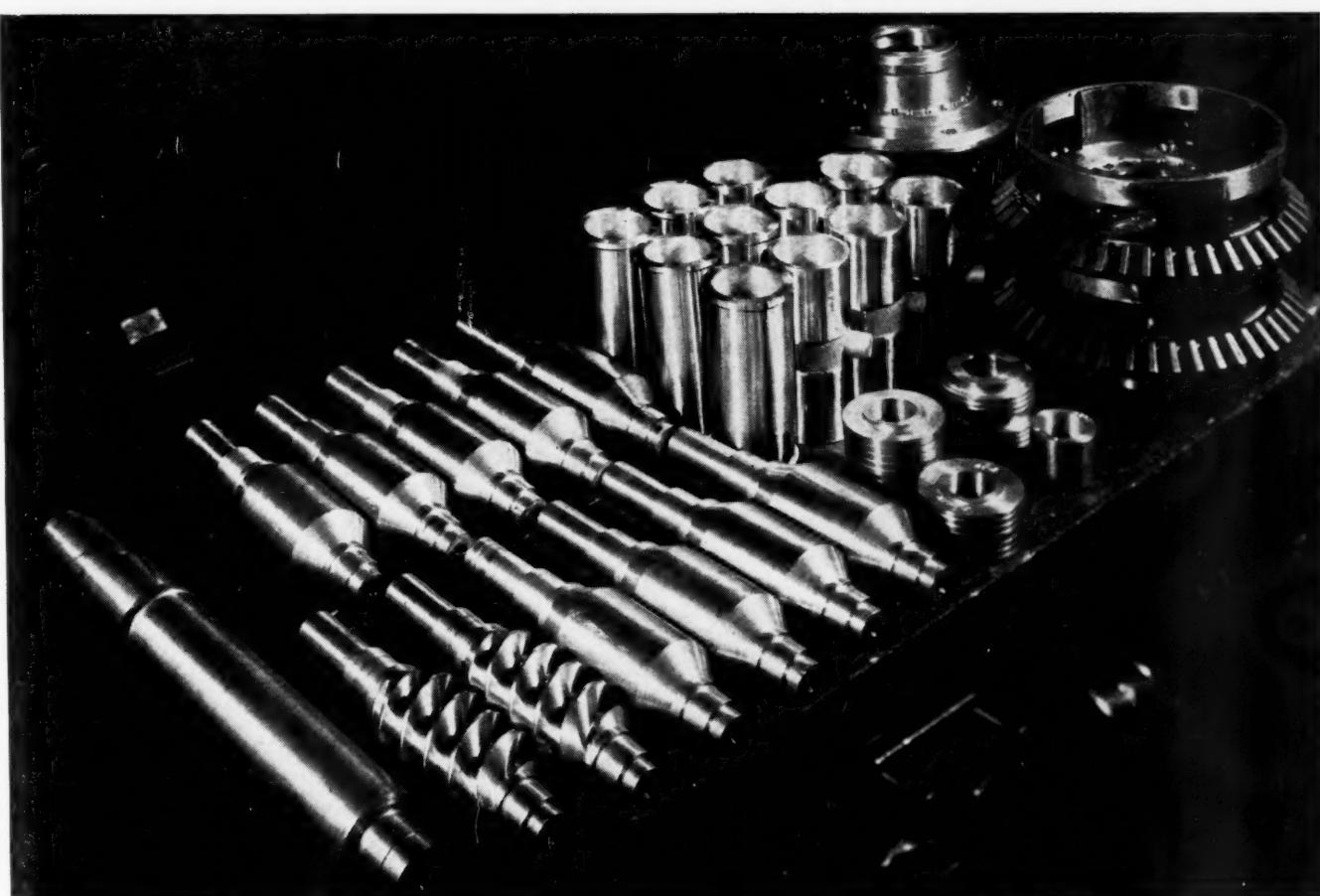
The ability to produce maximum

tonnage . . . in coal, slate or rock loading . . . the stamina to stand up and take the punching, even in triple shift service, with so little maintenance, can be attributed to the sturdy and dependable "teamwork" of each "Automat" part.

This is why operators who maintain a high level of production through the years, with their "Automats", insist upon genuine Myers-Whaley parts for replacement. Make sure that the fighting spirit built into each Whaley "Automat" is preserved by making repairs and replacements with genuine "Automat" Parts. Myers-Whaley Company, Knoxville 6, Tennessee. • • •

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**Remember, the "Automat" will load—in its stride—any lump of coal that will pass through your tipple, or any lump of rock your cars, aerial tram or larry can take.**



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*Mechanical Loaders Exclusively  
For Over 38 Years*

of both. In any case, the space taken by a cushioned blast may prohibit the use of enough stemming for safety and a blowout shot may result, and this shot in its escape may be quite dangerous, possibly being accompanied by exploding methane and coal dust. The effect of the presence of methane and coal dust in a borehole has not been given enough study.

**Crevises Are Dangerous**—Where the periphery of a borehole is creviced by the mining of beds above or below the coal bed being shot or is cracked by shots in adjacent holes already fired in the same working face, the shot may blow out on the broken side or at the cut, and such a blowout shot possibly is even more dangerous than one that blows out near the roof. We are presuming the shothole is at the roof and the coal is cut at the floor. We, in the United States, have little such difficulty, for usually only one seam is mined at a time, for the time to mine the second seam has not yet arrived.

**What to Do Where Coal Is Creviced**—Where such creviced conditions occur, the holes should be explored with a rod having an offsetting pointed pricker at its end that will enter the crevice. If one is found, the British have but one answer: "Don't fire the hole." But, with another hole, you may strike or only too narrowly avoid another crevice, and the explosion will open up the way to that crevice, which is none too hopeful a condition. It may be necessary to drill another shothole, but at least "don't use a cushioned shot" certainly is good advice. The hole should be clean and the cartridge should fill the hole and be fitted in its strength to the work to be accomplished. It should keep any considerable quantity of methane from collecting in the hole, so it would seem that the hole should be just small enough to admit the cartridge without use of any violence to position the charge. Most of the methane entering a closely filled hole must drive out air or other methane through the tamping.

**Leverage on Coal Beam**—One cannot

help feeling that keeping the stemming some distance away from the end of the hole gives the pressures from the explosion the needed leverage to break off the coal beam at the back of the cut and makes less pressure necessary to break down the coal. The stemming, of course, is compressed by the explosion, and its inby end moves outby as soon as the explosion occurs; especially does the inby part of the stemming, for the stemming first placed has to be relatively lightly tamped for fear of detonating the explosive prematurely. So the pressure extends for some distance outby the back of the cut even in an uncushioned hole. This may make a small charge effective, and anything that does that is of advantage.

**Cushioned Shot Loses Some of Its Effect**—However, the cushioned shot loses some of its effect, because the expansion of the gases spreads over a larger volume of air and is less forceful for that reason and because of the greater number of milli-seconds involved in shooting, thus causing less "brisance," as the French term it. That dilution and delay therefore conceivably might require the use of more, or a more forceful, explosive.

The aim of the explosives engineer is to provide just enough oxygen to burn up by reaction all the other material in his explosive, including the wrapper. Nothing is to be left to arrive unburned at the mouth of the hole. Cushioning introduces explosive factors that may not be burned at all until the mouth of the hole is reached, where they will burn if the particles in the powder still retain enough heat to ignite them or if they themselves are so hot that they will ignite and burst into flame.

#### Dangers of Cushioned Blasting

- (1) Reduces Tamping Space.
- (2) Provides Storage Space for Coal Dust, Methane and Air.

## Mine Foremen, Ohio

### Cold Outside, Dry Inside

**Q.**—What effect does a low outside temperature (below 60 deg. F.) have on the humidity of a mine?

**A.**—The air in the mine apparently is assumed by the examiner to be at 60 deg. F., which is possibly the actual temperature; however, the temperatures of mines vary. Spitzbergen mines are always below freezing, for roof and coal are both frozen, and deep mines, as also those not far from the equator, have higher temperatures than 60 deg. F. Any air that enters at a temperature lower than the mine temperature will be warmed on entering and will be incompletely saturated at that higher temperature, even if completely saturated at the lower surface temperature and it will take up moisture from the mine and carry it away, making the mine dry, especially near the entrance. Water will evaporate at all temperatures, even below freezing. Even ice will evaporate.

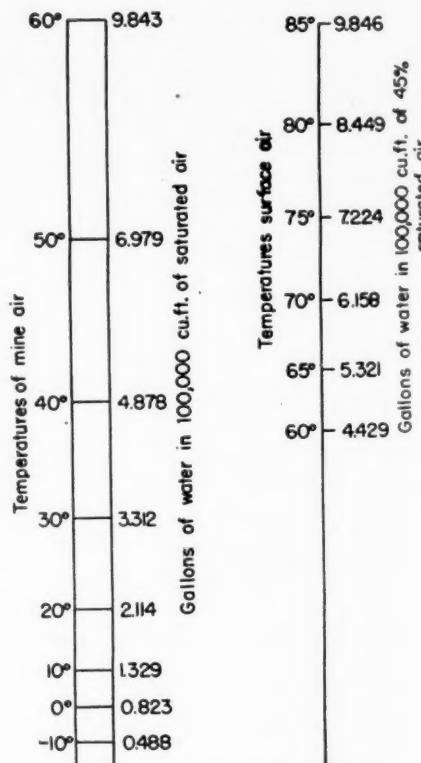
**Warm Air May Dry a Mine**—How much entering air will make a mine dry depends on the lowness of the outside temperature, the warmth of the mine and the percentage of saturation of the outside air. If the outside temperature is only a little below that of the mine or if the outside air is well saturated, the drying will be inconsiderable, but cold air usually is relatively dry, and then if the temperature of that air is the same as that of the mine or even lower than that of the mine, the air will dry out the mine quite rapidly, because the entering air will be so far from saturated that it will be greedy for moisture.

Remember that the outside air nearly always is taking up moisture from ponds, streams and lands; that is why it has such saturation as it has and it gets that moisture from surfaces at a temperature about that of the air. If the air entering the mine has such a quantity of water vapor as will not saturate it at mine temperature, it will tend

to take up all the moisture it will need for its saturation at that higher temperature.

In Ohio, which is a relatively moist State, mines dry out less rapidly in periods of low temperature than they do where the air is less moist. In western States, the air is dry and if the mine has any moisture it will evaporate into the air, despite the fact that the mine temperature may be lower than the surface temperature.

**When 80-Deg. Air Dries Mine**—Suppose the air is brought to the mine at 75 deg. F. and at 45 percent saturation (see Fig. 1). The tables show that, with saturation, 100,000 cu.ft. of air will contain 16,054 gal. and with 45 percent saturation it will be carrying  $0.45 \times 16,054$  gal. = 7,224 gal. But to saturate air at 60 deg. F. takes 9,843 gal. per 100,000 cu.ft. Evidently the warm surface air entering the mine will take 9,843 - 7,224 gal. = 2,619 gal. of water per 100,000 cu.ft. of air while traveling through the workings, if it leaves the mine fully saturated. So air 15 deg. warmer than the mine temperature can dry the mine and not dampen it, provided the warm air is dry enough, and that holds good also if the surface air is at 80 deg. and at 45 percent of saturation, though the air can pick up then only 1,394 gal. per 100,000 cu.ft. In fact, if the air is at 85 deg. F. and 45 percent saturation, it will add to the moisture of the mine only 0.003 gal. per 100,000 cu.ft. of air.



**Fig. 1**—It is easy to note that the surface air at mine temperature and above is capable of taking up water vapor if, when entering the mines, it has only 45 percent of humidity. All the warm surface air represented on the right will be able to take up mine moisture when it goes underground during a high-barometer sunshiny period, when the pressure of the atmosphere is high and the humidity accordingly is low.

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Left; new car body mounted on old trucks.  
Right; old car after 22 years service.

# After 22 years service— NEW MINE CAR BODIES BUT THE SAME Timken Bearings



Left; new car body mounted on old trucks.  
Right; old car after 22 years service.

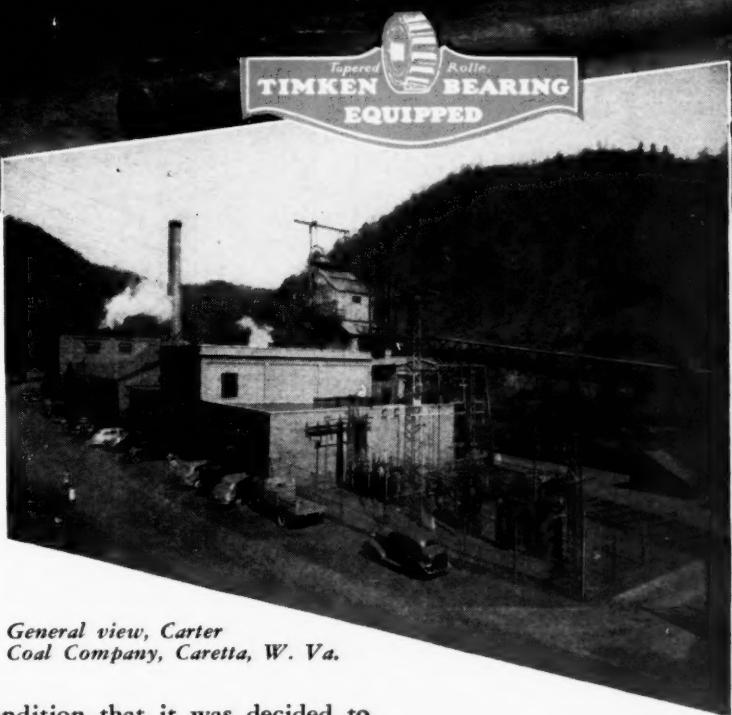
It has often been said that Timken Tapered Roller Bearings frequently have been known to outlast the cars in which they are installed.

A notable instance of this is being experienced at the Carter Coal Company's No. 2 mine, Caretta, W. Va., where some Timken Bearing Equipped cars have been in service for 22 years.

After this long period of operation, the replacement of these cars appeared necessary. However, examination of the car trucks — including the Timken Bearings — showed them to be in such splendid condition that it was decided to replace the car bodies only.

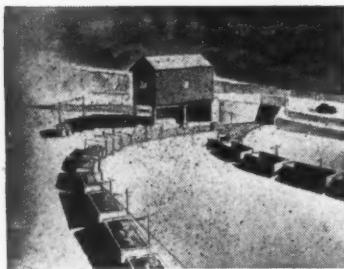
It will be noted from the photograph that much larger bodies than those originally used have been installed on the old trucks; this means that the loads on the Timken Bearings are greater than ever, but the bearings are taking them with the same sureness and dependability they displayed in their previous 22 years of operation.

Specify Timken Bearings for your mine cars and make sure the trade-mark "TIMKEN" appears on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio.



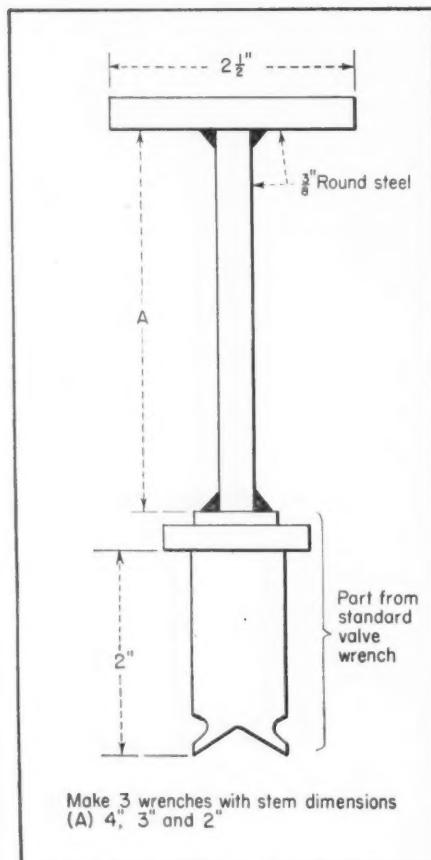
General view, Carter  
Coal Company, Caretta, W. Va.

**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**

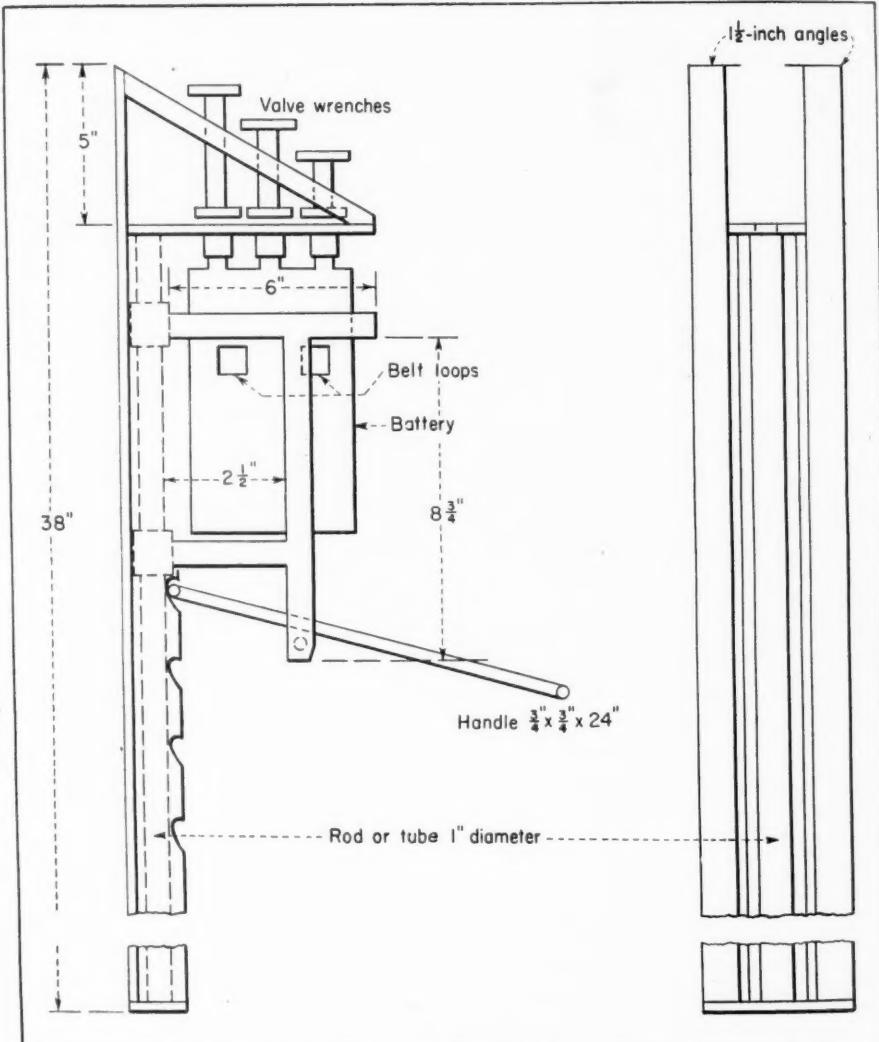


# Operating Ideas

## Cap Lamp Cell Remover Saves Time and Damage



Make 3 wrenches with stem dimensions (A) 4", 3" and 2"



Lamp puller and three special valve wrenches.

THREE CELLS can be removed from an M.S.A. Model K cap-lamp battery in less than a minute, compared to 4 to 8 minutes formerly required, by a new method originated by Fred Beyer, lampman for the Montour No. 9 mine, Pittsburgh Coal Co., McDonald, Pa. It required the construction of the wall-mounted puller and three special valve wrenches shown in the drawing.

The steel column is  $4\frac{1}{2}$  in wide over the two  $1\frac{1}{2}$ -in. angles and its height is 38 in. Plates  $\frac{1}{8}$  in. thick are used for the braces and vertical members of the battery holder. The

plate at the top of the vertical rods or tubes is  $\frac{1}{4}$  x  $2$  x  $6$  in. and that at the base is  $\frac{1}{4}$  x  $1\frac{1}{2}$  x  $4$  in. Assembly was by arc welding. The puller is bolted to a  $1$  x  $8$  x  $42$ -in. board which in turn is fastened to the wall.

Standard valve wrenches were used for making the three wrenches of different handle lengths that assure convenient operation. To attach the wrenches the battery is placed in the holder, then pushed up against the wrenches, which are each given the turn necessary to lock them. When the handle is pulled down, the holder engages the belt

loops and pulls the case off the three cells.

Under the method formerly followed, a valve wrench was placed in a vise and then attached to one cell. If the case could not be pulled away from the cell by hand, as often was the case, a bar was used to pry between the vise and case. Many times this resulted in a damaged case.

That the puller saves much time is indicated by the record of its use during the first four weeks after installation. In that period 750 rubbers were changed on the lamp batteries.

# IT'S ROEBLING FOR PORTABLE POWER CABLES

TOUGH GOING is easy for rugged Roebling portable cables. Drag or tangle them, immerse or run over them . . . they keep giving full service.

They're tough themselves—built to flex easily yet withstand hard knocks . . . on shovels, mining machines and welding equipment, and other portable machinery.

Roebling "extras" in cable manufacture—like lead-mold curing to assure a slick, tough rubber jacket—pay off for the cable user. Whatever the purpose, Roebling has the right portable for it.

Let a Roebling engineer show you how to translate the correct cable into profitable performance.

#### JOHN A. ROEBLING'S SONS COMPANY

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**TOUGH!**

**FLEXIBLE!**

#### Roebling Rubber Portable Cables

Roeclad for high abrasion and impact resistance, and Roecable for extra flexibility, both supplied with or without ground wires.

#### Roebling Mining Machine Cables

Twin Flat Type with parallel conductors. Also Single Conductor Type specially suitable for mine locomotive reels.

#### Roebling Welding Cables

Roeweld Type TRPH for lead or trailing cables, recommended for use where dampness or abrasion prevails.

#### Roebling Rubber Jacketed Flexible Cords

Made in a variety of types for pendants and light or heavy portable use in homes, offices and shops, to resist normal conditions or exposure to oils, acids and sunlight.

# ROEBLING

ELECTRICAL WIRES AND CABLES

Weatherproof Wires • Service Entrance Cables • Rubber-Covered Wires and Cables (Including Thin-Wall Insulated Building Wires and Cables)  
Rubber Sheathed Portable Cables • Rubber Insulated Power Cables • Magnet Wires • Telephone Wires • Pigtail and Braided Copper • Trolley  
Contact Wires • Bare Copper Strand • Varnished Cambric Power Cables.



## Bathhouse Design Economizes on Space

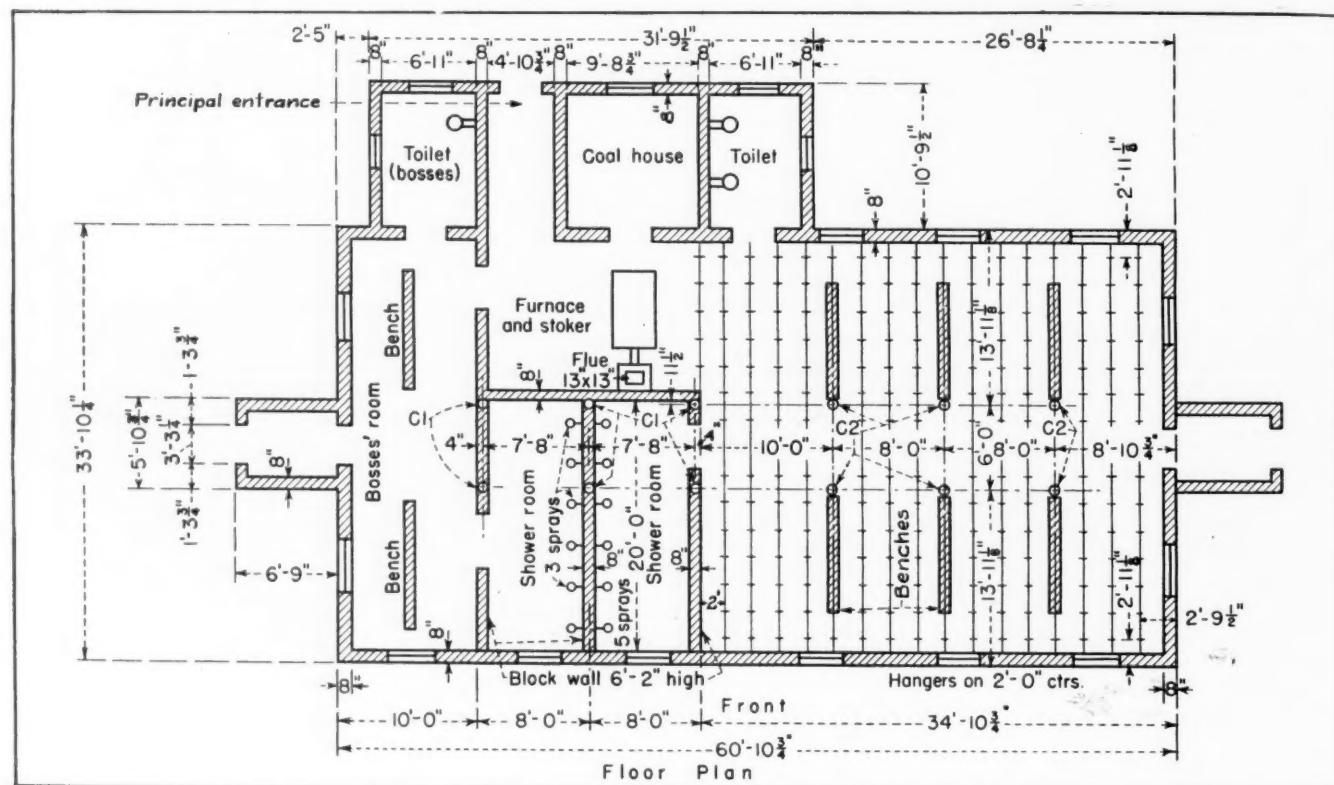
OBTAINING a convenient layout while holding the building to a relatively small size was the goal in the design of the bathhouse at the new Reels Cove mine of the Tennessee Products Corp., Whitwell, Tenn. Clothes hangers are provided for 203 workers and 45 bosses. The main section of the building is 33x60 ft. and the height from floor to eaves is 10½ ft. A wing 10x30 ft.

with an eaves height of 8 ft. includes an entrance hall, coal house and toilet rooms.

Outside walls are cement block and the partitions are the same material. Those partitions that fence off the shower rooms and the bosses' room are but 6 ft. 2 in. high and thus do not obstruct ventilation.

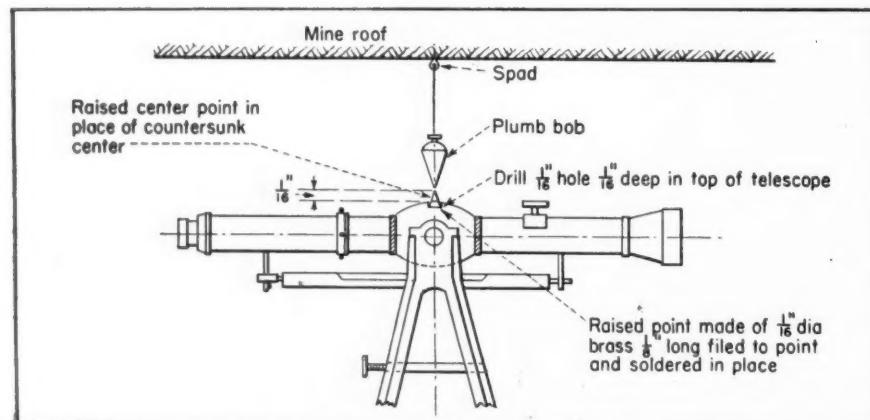
The building has a hip roof, which is the ceiling. Chain suspensions for the 203

clothes hangers in the main room are spaced 2 ft. each way. On the accompanying drawing the hallway is designated as the principal entrance because it is directly in front of steps leading up to the lamphouse. A continuation of that hallway into the main room also serves as the furnace and stoker room. The building was designed by George Barnard, mining engineer, Birmingham, Ala.



This bathhouse serves the new Reels Cove full mechanical mine.

## Center Point Improves Transit for Low-Coal Work



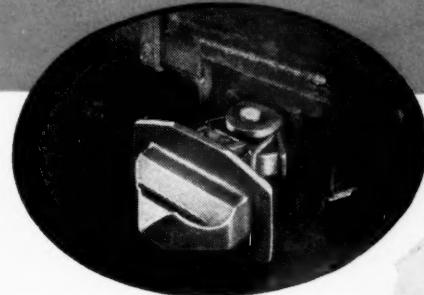
The raised point makes it easier to center the transit in thin coal seams and in other cases where setting close to the roof is necessary.

SUBSTITUTING a raised point for a countersunk center hole on the top of the telescope of a transit enables the instrument man to center the transit with less error in low coal, according to experience related by W. V. Kincaid, mining engineer, Gauley Mountain Coal Co., Ansted, W. Va.

Mr. Kincaid mentions 40 in. and under as low coal but finds the point center useful in any place where it is necessary to set the transit so close to the roof that it is difficult to see the depressed center on top of the telescope. On the instrument he has had fitted the point was made from a brass rod 1/16 in. in diameter. The end was filed to a sharp point and the piece cut off 1/8 in. long. After drilling a 1/16-in. hole 1/16 in. deep in the top center of the telescope the point was soldered into place, taking care to get it on the axis of the instrument.

# USE O-B AUTOMATIC COUPLERS ON END-DUMP CARS, TOO!

They're Designed  
to Shed Falling  
Coal



If you are planning to install end-dump cars in your mine, include O-B Automatic Couplers in your plans. They're designed especially to stand up under this type of service.

It's easy to see why. Look at the male coupler head pictured here. Notice its sturdiness, the absence of moving parts to be hammered and jimmied by falling

rock or coal. Install this head on the gate end of your car and you can dump over it constantly, the coal falling away in a steady stream.

But whether your tipple is designed for end-dump, drop-bottom, rotary or side-dump cars, O-B Automatic Couplers can be used to give you all of the advantages of modern train operation.

*Specify*  
**O-B AUTOMATIC  
MINE CAR COUPLERS-**  
—Designed Specifically to Handle  
Mine Operating Conditions

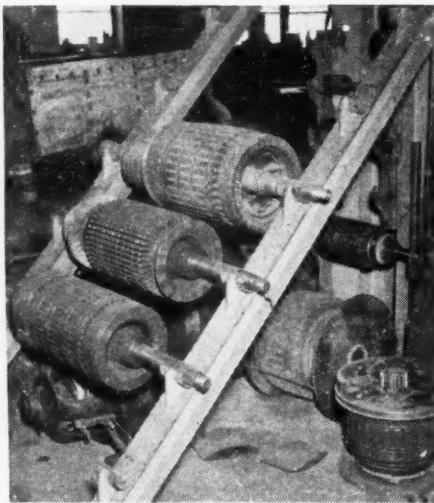


## Armatures Put in the Clear at Reliance

AN INCLINED STEEL RACK makes a safe and accessible place for storing armatures, according to Raymond Dupont, master mechanic at the Reliance mine, Union Pacific Coal Co., Rock Springs, Wyo.

The all-welded rack, shown in the accompanying illustration, is long enough to accommodate the usual complement of repaired and yet-to-be-repaired armatures necessary to be in the shop at one time. Underneath the inclined rack and fastened to the building column is a vertical rack for storing the smaller armatures. Racking the armatures in this manner eliminates the possibility of their being rolled around on the floor or of anything being dropped or thrown on them.

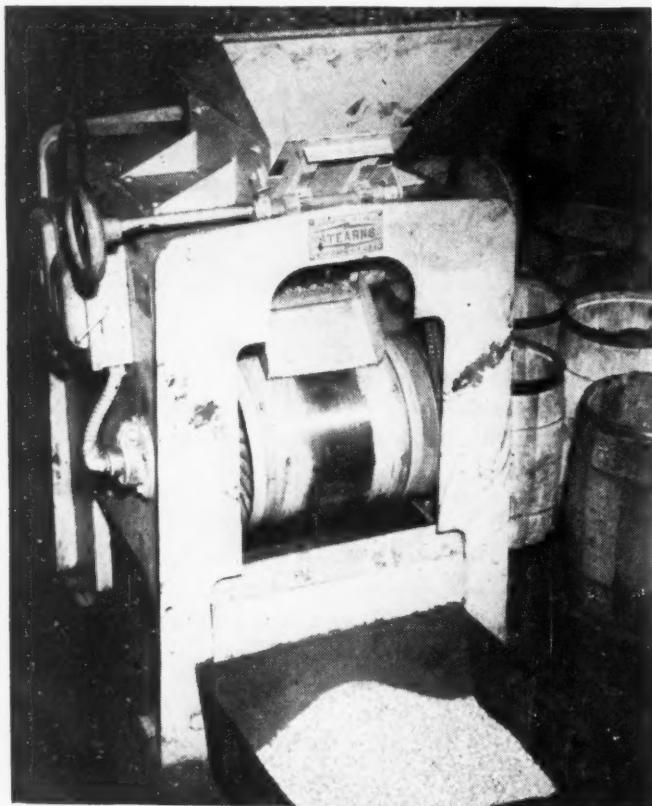
Rack affords ample protection for armatures.



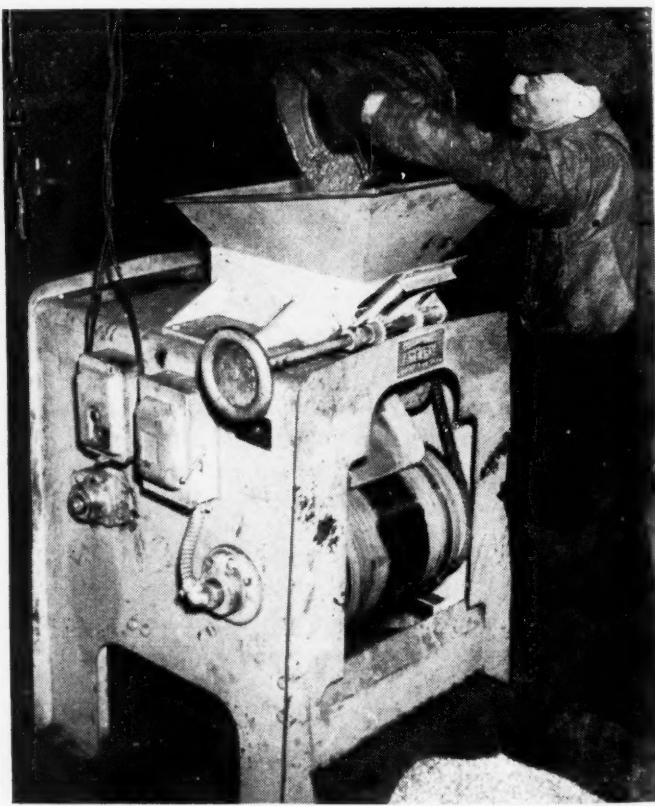
### Credit

Among the nation's largest laboratories are the mines, where equipment either works or it doesn't stick. Many of the ideas back of the changes made at the factory are hatched out on location—underground—credit sometimes being given. But Coal Age gives you credit and cash too. Send in those mechanical, electrical, operating and safety ideas that are helping at your mine. If accepted, Coal Age, upon publication, will pay \$5 or more for each.

## Separator Hikes Return on Scrap Brass



Reclaimed brass chips fall into the outside pan.



Brass and ferrous metal chips are dumped into the hopper.

RUNNING CHIPS from the various shop machines through a magnetic separator brings a better return for scrap brass, says Samuel Williamson, superintendent of the Lehigh Navigation Coal Co.'s Central Repair Shop, Lansford, Pa.

All the steel and brass chips gathered from the lathes, shapers, etc. are fed through the Stearns magnetic separator shown in the accompanying illustration. The chips are fed from the hopper through a gate adjusted by a rack-and-pinion device. As the chips strike

the rotating magnetized steel cylinder the steel chips are attracted to it, while the brass chips are thrown out into the pan in front. On the backside, a brush bearing against the cylinder brushes the steel chips off into another pan.



America's Most Complete Line  
of Material Handling Buckets

# Dragline Buckets

Sizes— $\frac{1}{2}$ ,  $\frac{1}{2}$ ,  
 $\frac{3}{4}$ , 1,  $1\frac{1}{2}$ ,  
2,  $2\frac{1}{2}$  yds.



**SLICING PENETRATION**

We operate  
the largest  
and most com-  
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foundry in the  
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"Quality Since 1880"  
**PETTIBONE  
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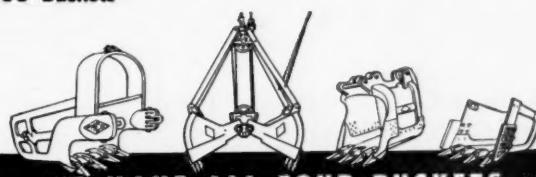
## Sharpest cutting edge of any dragline bucket

**Bottom** — One piece 14% manganese steel developing up to 120,000 p.s.i., making possible wide set corner teeth that break up material for easy, fast, penetration.

See Your Equipment  
Dealer About  
PMCO Buckets

**Body** — Body sections tapered and rounded for easy dumping of wet sticky material.

**Teeth** — 14% manganese steel. Reversible socket type, easily removed for replacement. Kept tight in tapered socket by digging pressure.



**WE MAKE ALL FOUR BUCKETS**

## Shop Truck Does Own Crane Work

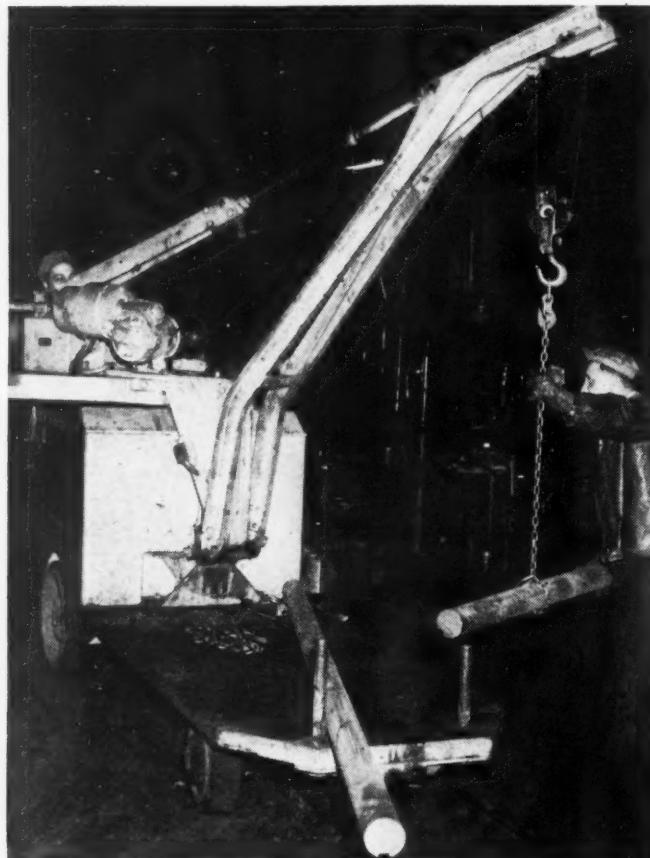
A BATTERY-OPERATED truck-mounted crane and a two-man crew are on the go every minute, declares Samuel Williamson, superintendent, the Lehigh Navigation Coal Co.'s Central Repair Shop, Lansford, Pa.

### The Elwell-Parker Type WH60 truck.

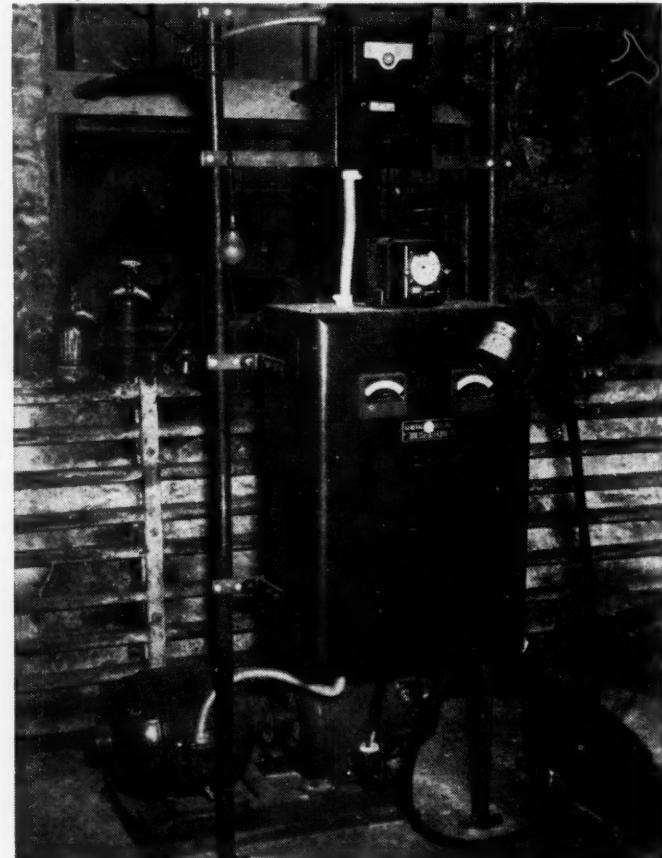
shown in the accompanying illustration, has a capacity of 6,000 lb. Powered by an Exide Iron-Clad Type TLM, 450-amp.hr. battery, the truck shuttles between buildings all day long. At the end of the shift the battery is put on charge at the charging station shown

in the illustration. A General Electric 5-hp. Tri-Clad motor and a 4-kw. generator take care of the conversion to d.c. from the 25-cycle supply.

This truck, with its crane hoist, does its own loading and unloading.

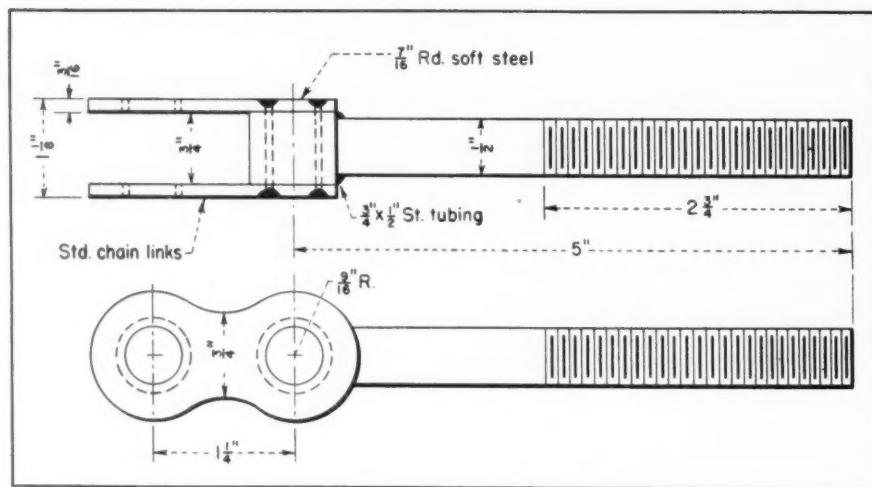


Truck-mounted crane picks up shafts in the machine shop.



Charging station is located along a wall in the machine shop.

## Loader Delays Reduced by Better Brake Clevis



DESIGN OF a 7BU brake clevis said to be superior in lasting qualities to the original clevis (No. 1672), shown in the drawing, was worked out by mechanics at Banning No. 1 mine of the Pittsburgh Coal Co. at the suggestion of John Narbut, master mechanic. Breaking of the old clevis at the point where the bolt is attached to the stirrup was the cause for many delays to the loading units.

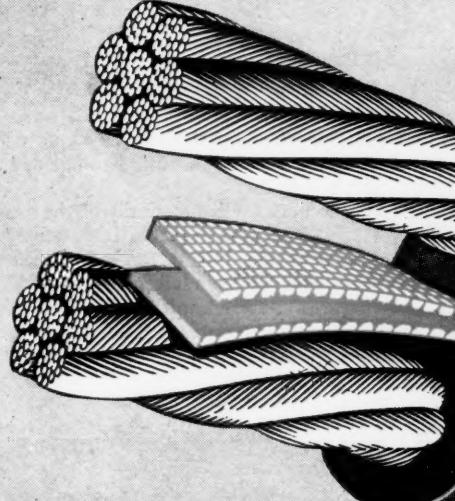
The 1-in. bolt is welded to a  $\frac{3}{4}$ -in. length of  $\frac{3}{4} \times \frac{1}{4}$ -in. steel tubing. Sides of the stirrup are links of standard No. 1935-16 chain. The tie is a  $1\frac{1}{8}$ -in. length of  $\frac{7}{8}$ -in. round rod that is welded at its ends to the links. In this design the rod is free to pivot on the link.

#### Improved brake clevis from stock parts.

What you want is a cable that will  
cut fire  
hazards . . .



Tough flame-resistant Neoprene jacket plus unique breaker strip construction are real investments in safety and continuous mine operation. Securityflex mining cable will not support combustion; resists shorts and overloads—all of which means lower cost per ton mined. Anaconda Wire & Cable Company, Subsidiary of Anaconda Copper Mining Company, 25 Broadway, New York 4, N. Y. Sales Offices in Principal Cities. 40298



**Here are the big features of Securityflex—**

**ADDED SAFETY**—Special high dielectric Breaker Strip between conductors minimizes shorting under tension or compression—and also anchors jacket, preventing loss of adhesion to conductor insulation.

**NO KINKING**—D-Shaped construction prevents failures due to one conductor riding over the other.

**EXTRA RESISTANCE**—Tough flame-resistant Neoprene jacket—tear resistant because of special seine twine reinforcing.

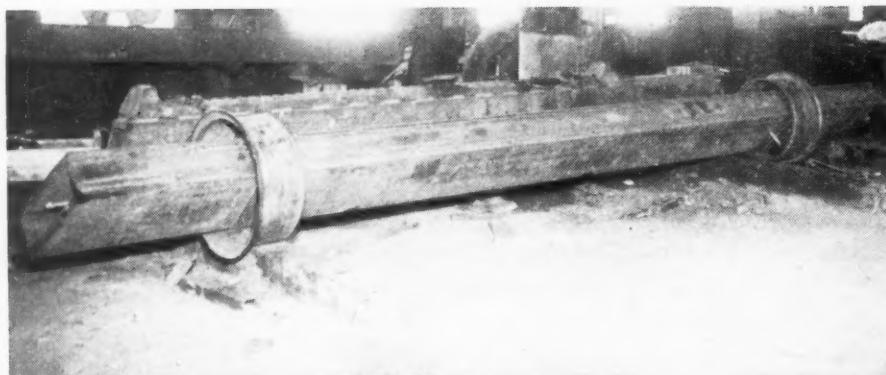
**NO TWISTING**—Herringbone compensating construction allows freer movement of copper conductor.

**ANACONDA**

*Securityflex* CABLE



## Rims Help Turn Welding Work



Mounting the dipper stick in rims allows the welder to turn the work alone.

TIRE RIMS help speed up the fabrication of dipper sticks in the Dick Construction Co. shop at the Philadelphia & Reading Coal & Iron Co. Monitor stripping, Locust Gap, Pa.

The rims, as shown in the accompanying illustration, permit the welder to roll the dipper stick to any position desired. More important, he can position the longitudinal seams for flat position work. The dipper stick, being fabricated for a 170-B Bucyrus-Erie shovel, measures 8½x18 in. and is 21 ft. 10 in. long. The design of the stick has been altered so that when the stick is in service the longitudinal seams are in what might be termed the horizontal rather than the vertical plane.

## Spiked Sawhorse and Short Bucksaw Save Time

TIME REQUIRED in sawing round mine posts of small to medium diameters has been materially reduced in the Reels Cove mine of the Tennessee Products Corp., Whitwell, Tenn., by supplying each section or timber crew with a special sawhorse of a design proposed by Hubert Dempsey, blacksmith at the mine. He also makes pipe frames for one-man bucksaws used in the mine that are considered a substantial improvement over the typical crosscut handsaw.

As shown in the illustrations, the sawhorse is made up of three pieces of wood cut

from 2x6-in. stock. A special headless spike with the end made rather sharp is embedded blunt end first in each bevel of 90-deg. notches 3 in. deep in each end piece. The sharp ends of the spikes stick out 1½ in. A 4- to 7-in. round post dropped into the notches is impaled on the four spikes and thus is kept from turning when a man starts to saw. Dropping the post 6 in. or so usually suffices to make the spikes dig into the post, but in some instances the man slams the post down against the spikes to insure anchorage the first time.

This sawhorse is light in weight and holds the post only 4 in. above the mine bottom. Normal thickness of the coal in Reels Cove mine is 39 in. and the usual range is 30 to 45 in. Room faces are hand-loaded onto chain conveyors.

The bucksaw is practically of the same design as one now available from some mine-supply houses, but at Reels Cove only the 30-in. blade (Sandvik No. 29) is purchased. The blacksmith cuts a piece of ½-in. pipe, fashions slots and holes at the ends and bends the piece to a bow with ends



Sawing a round post is a one-man job with this sawhorse. The spikes make it unnecessary for another man to hold the post to keep it from turning. With the conventional type saw two men probably would be used.



Sawhorse and bucksaw for conveyor mining. The exposed spikes prevent the post from turning. Everything except the saw blade was fashioned on the job.

# Before you replace worn-out, obsolescent mine cars



13,215 mine cars built of U·S·S Cor-Ten are now in service in 55 large companies' operations.

53% of these cars have been built on repeat orders — after they had demonstrated their superiority.

Although some of these cars have been in use more than 10 years, we have yet to hear of a single failure due to wear.

... look at this COR-TEN record!



WHEN mine operators come back year after year for more COR-TEN cars, they must be good. Take the case of a well-known coal company in West Virginia—it's typical.

This letter from the president tells the story:

"Since 1935, we've bought 825 U·S·S COR-TEN mine cars which are operating in two of our mines. The first lot of 400 cars was delivered during 1935-36, and the second lot went into service in 1937.

"After six years' operation the COR-TEN steel in all these cars is as good as new. We've yet to spend a cent for maintenance of the steel in the cars.

"We've just ordered 200 more COR-TEN cars for another of our operations—need we say we are sold 100% on your COR-TEN High Strength Steel.

U·S·S COR-TEN's ability to outlast ordinary construction—to make mine cars stronger, tougher, more corrosion-resisting, able to carry bigger loads for a given over-all dimension—and to keep weight and costs to a minimum, has been proved *in service*, under all sorts of conditions.

How about letting our engineers show you how little it costs to give your cars the benefits this service-tested, high-strength steel insures?



AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago, New York  
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago  
COLUMBIA STEEL COMPANY, San Francisco • NATIONAL TUBE COMPANY, Pittsburgh  
TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham  
United States Steel Supply Company, Chicago, Warehouse Distributors  
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EVERY SUNDAY EVENING,  
United States Steel presents *The Theatre Guild on the Air*. American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.

## UNITED STATES STEEL

## Spiked Sawhorse and Short Bucksaw Save Time (continued)

spaced  $\frac{1}{2}$  in. greater than the blade length to hold it in tension. These saws are cheaper than hand-crosscut saws and require but one man instead of two.

Labor saving is due principally to the

fact that without a sawhorse it takes one man to hold the round post while one or two are sawing. Even the usual alternatives of hunting a place to wedge the post or "spiking" it to the base of a standing prop take

time. As a precaution against men stepping on the spikes, the sawhorses, or sawbucks, as some call them, are turned upside down in some out-of-the-way place of the section when not in use.

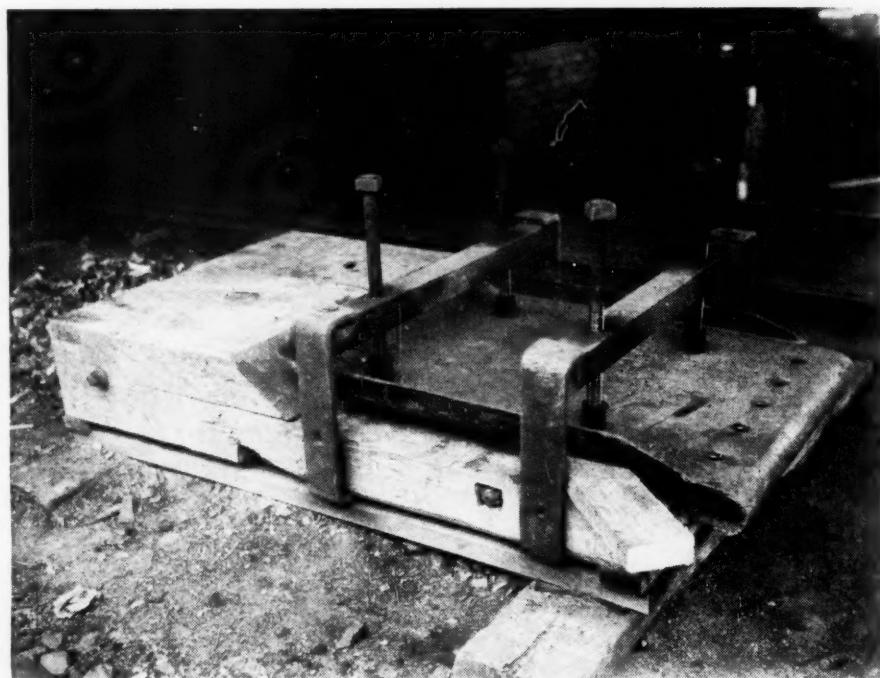
## Wooden Press and Yokes Straighten Doors and Cars

WRECKS WILL CONTINUE to occur in coal mines, judging from the experience of railroads, which, in contrast to mines, have permanent tracks and shun at no expense in their installation and maintenance. Consequently, the straightening of steel mine cars continues to be a maintenance problem. That such straightening need not entail elaborate and expensive equipment is indicated by the successful use of a wooden frame and press at the Hilo mine of the High Splint Coal Co., High Splint, Ky.

The car-straightening frame, housed in an open shed next to the blacksmith shop, consists of two wooden yokes surrounding the track, with the top crossbars at proper height to accommodate the car, plus timbers, blocks and screw jacks. One of the accompanying illustrations shows a set-up in straightening the side plate of a steel drop-bottom car. Experience has taught the workmen the proper positioning of the jacks to correct almost any bent condition.

Doors of the drop-bottom cars are straightened in a wooden press fitted with two movable steel yokes, each with two jackscrews attached. As shown in the second of the accompanying illustrations, the frame is made from three 12x14-in. pieces of oak bolted together. These are supported at the left end, leaving a slot under the right end through which the steel yokes can be moved to any position. An upward curve of the slot at the left-hand end is a highly necessary "trick." It allows for positioning the left yoke at an angle away from vertical, thus straightening the curved lip of a door.

The car repairmen have learned just where to block underneath the door and how much to force it beyond normal to compensate for the springing back. W. C. Boyles, car repairman at the mine, designed and built these car-straightening presses.



Door of a drop-bottom car being forced back to normal.

Straightening a steel car damaged in a wreck.

# RETOOL

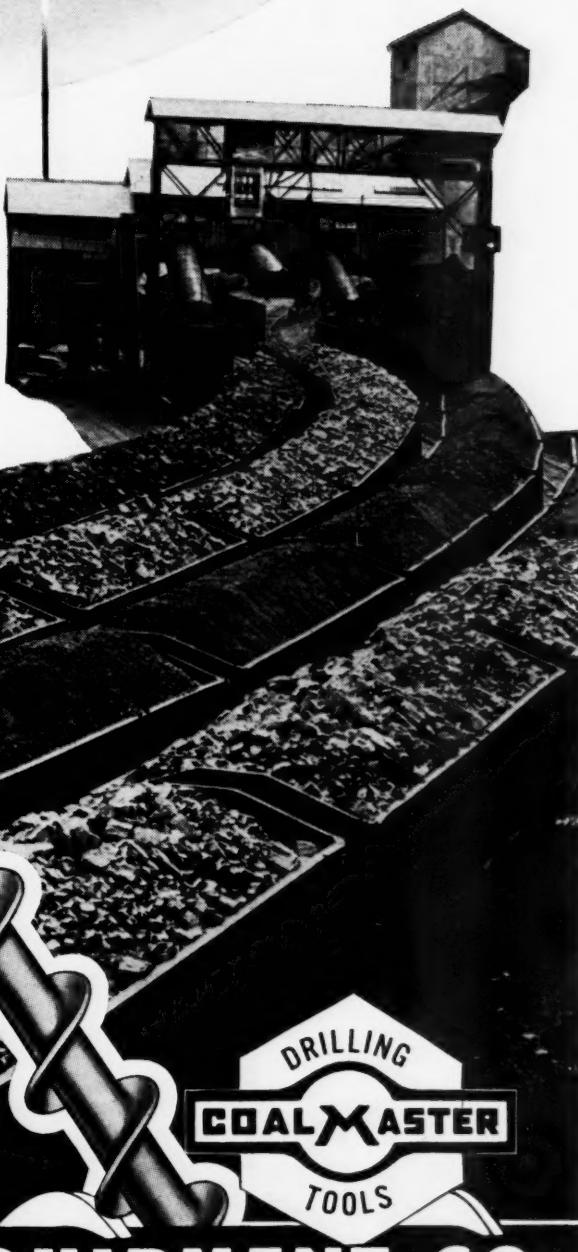
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For Faster <sup>post</sup> War Production

**M**ore coal per shift by modernized methods—from face to tipple—is your only answer to tomorrow's competition.

Start right by speeding up your drilling. Coalmaster matched-set assemblies—expertly engineered for hand held, post mounted and machine mounted drills—are drilling better blast holes with more speed and economy for hundreds of progressive mines.



### CENTRAL MINE EQUIPMENT CO.

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### THE CINCINNATI MINE MACHINERY CO.

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# News Round-Up



## Lewis Rejoins A.F.L. After 10-Year Rift

The United Mine Workers of America rejoined the American Federation of Labor Jan. 25, readmission being voted unanimously at Miami, Fla., by the federation's executive council, which then unanimously elected John L. Lewis, president of the mine workers, as 13th vice president of the A.F.L. and a member of the council.

Lewis' reaffiliation closed a division in the ranks of labor that began in 1934 and led to the formation in 1938 of the Congress of Industrial Organizations, of which the miners' union and Lewis were early and influential supporters. Lewis came back to his first allegiance on his own terms, after negotiations lasting more than a year.

William Green, A.F.L. president, said the return of the miners was significant because of the emphasis "upon the need for unity and solidarity. I interpret this step taken by the United Mine Workers as evidence of their determination to wipe out the division of labor and to establish unity. It will have a profound effect upon the expansion and development of a united labor movement."

## Cooperation to Widen Use of Bituminous

A new plan of cooperation between producers and retailers was announced Jan. 19 by Fred S. McConnell, president of the National Coal Association, as follows:

"The board of directors of the National Coal Association, at a meeting today, gave approval to development of a comprehensive plan of cooperation between coal producers and coal merchants to increase the market for domestic use of bituminous coal, to foster improvement in the retail marketing and servicing of coal for the benefit of householders and other domestic users, and to bring about more effective relations between the producers and retailers of coal generally.

"A committee of bituminous-coal-company executives is to be appointed promptly to perfect such a plan for presentation to the entire membership at a convention of the National Coal Association to be held as soon as it can be arranged.

"The development of methods of improving the coal industry's service to the domestic consumer, including the promotion of the use of better equipment and the servicing of such equipment, has been under

study by coal-company executives for a long period. The steps taken today are a result of such study and contemplate development and launching of a complete program to carry such objectives into effect.

"The whole program depends upon achievement of a full working relationship in the common interest between shippers of coal and the retail coal merchants of the country, whose counsel, guidance and cooperation will be sought in the perfection of plans and the eventual launching of the program."

## Operators Announce New Mines

A project to develop a new seam of metallurgical coal in Logan County, West Virginia, was disclosed in simultaneous announcements Jan. 12 by the Chesapeake & Ohio Ry. and the Hutchinson Coal Co. A spokesman for the C. & O. revealed that a 9,000-ft. spur from Stollings to the site of the mine already was under construction. Robert A. Ritchie, president of the Hutchinson company, with headquarters in Fairmont, W. Va., said development of the mine is in charge of O. G. Schwant, general manager, with headquarters in Logan.

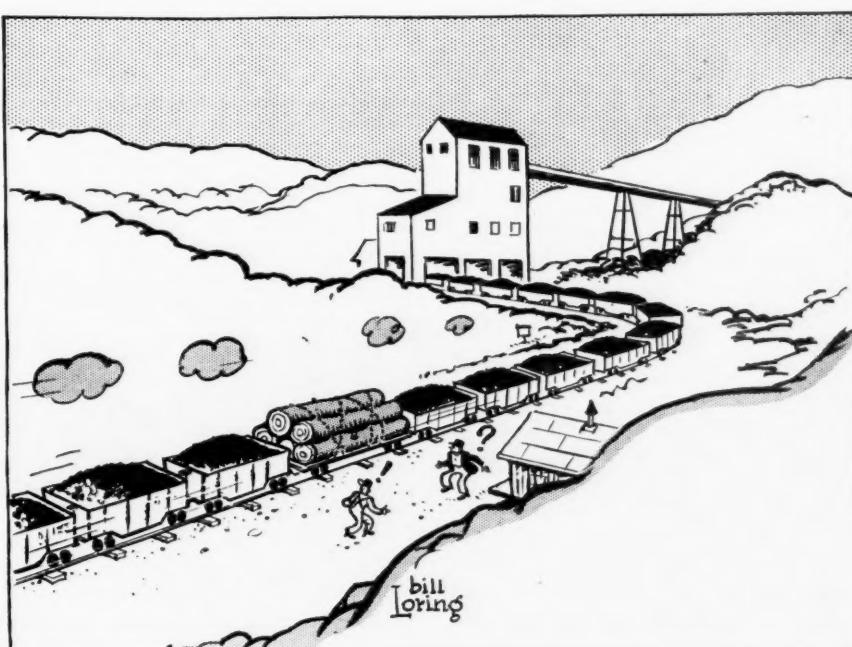
The mine will have a daily capacity of 3,000 tons and will develop an acreage

estimated to contain 25,000,000 tons of coal of byproduct quality. A contract has been signed with the Fairmont Machinery Co. to build a tipple and preparation plant that will include a Chance cone washer. Work will be started in the spring. The railroad spur will extend up Bandmill Fork of Dingess Run to the mine property. The town and postoffice will be known as Melville and the mine as Melville No. 11, after the late Melville Lee Hutchinson, who with his brother, the late Clyde E. Hutchinson, founded the coal company in 1909.

A slope operation, the mine will utilize conveyor loading throughout. The main conveyor to the tipple will have a vertical lift of 350 ft. on a span of 1,300. Completely mechanized, the mine's inside conveyors will eliminate trackage, mine locomotives and cars. Loading will be onto belts by Goodman power duckbills.

Tennessee Coal, Iron & Railroad Co. is sinking a new mine shaft in a cornfield midway between Concord and Hueytown, Ala., and the operation is expected to yield about 40,000,000 tons of coal for industrial use. About 600 ft. below the surface where excavation has been started is a rich seam varying in thickness from 2 to 7½ ft. and averaging 5 ft., according to preliminary surveys. The area to be worked by the new operation will be around 6 square miles.

Actual mining operations are expected to be under way about December, 1946, and



full production of 4,000 tons daily with two operating shifts and a maintenance shift by 1949. The new mine, called the Concord, will have a minimum crew of 750. Engineering on the new mine is being handled by H. C. Nyquist, T.C.I.'s chief mining engineer, under the over-all supervision of Ralph E. Kirk, manager of raw materials.

A stretch of level ground about in the middle of the coal deposit was selected for the base of operations. Here, besides the shaft, is located the slope for hauling coal out of and supplies into the mine. Here also will be the cleaning plant, general office, power house, lamp house, shops, employees' bathing quarters and all of the other buildings needed to insure maximum efficiency of a mining operation.

Roads are being built from the Bessemer-Lock 17 Highway to the mine site. Eight and one-half miles of track will be laid to link the mine with the Fairfield coking plant, together with a network of tracks needed at the mine. A reservoir to impound water, about 30 ft. high, must be built  $\frac{1}{4}$  mile from the operation; power lines brought in, and a few families living on the land moved out.

Strip-mining operations on a large scale will return soon to the Danville (Ill.) area with development of about 2,000 acres of land between Hillery and Hungry Hollow Road. The land is owned and controlled by the Ayrshire Collieries Corp., Ind., whose president, Robert P. Koenig, said that contracts have been let and that construction will start in the spring. The date of beginning of removal of coal, however, will depend on conditions in the labor and material markets. The property will be operated by the Fairview Collieries Corp., an Ayrshire subsidiary. The coal will be marketed by the Republic Coal & Coke Co., Chicago.

The tipple and cleaning plant, with a capacity of 5,000 tons daily, will be constructed near the center of the area by the McNally-Pittsburg Mfg. Corp. The coal will be washed and dried. The dragline will be an 1150B Bucyrus, and the coal-loading shovel has been contracted for with the Marion Steam Shovel Co. The dragline, one of the largest of its type in existence, will be able to scoop up 30 cu.yd., or about 32 tons, at a time.

To provide railroad access to the area, a switch track from the main line of the New York Central R.R. will be installed. Contracts contemplate a capacity production of about one million tons per year, meaning a life to the property of 15 to 20 years.

A new strip mine, with land area of 300 acres and estimated to contain 1,000,000 tons of coal, in France Valley 10 miles west of Danville and 5 miles northeast of Catlin, Ill., is to be opened in May by the Taylor-English Mining Co., Danville, Ill. The coal will be removed by the Dixon Block Coal Co., Linton, Ind., with E. W. Dixon, president of the company, manager of operations for the Taylor-English company.

A Monighan dragline with a 5-yd. bucket and a Marion shovel will be installed. A tipple now standing on the Wabash R.R. at Tilton, Ill., with three sidings in service, will be removed to a site on the Wabash 4 miles west of Catlin and coal will be moved from the new mine by truck to the

tipple, where it will be sized and graded. Dixon is now operating a mine of the Dixon Block Coal Co. at Catlin, which is to be abandoned in a few months.

Springfield Coal Corp. (Peale, Peacock & Kerr) is developing its No. 4 slope mine near Spangler, Clearfield County, Pa., in the B or Miller seam. The mine will be completely mechanized with a planned ultimate daily capacity of 5,000 to 6,000 tons.

The operation will be served by three slopes; first, haulage, 12x6 $\frac{1}{2}$  ft., 1,000 ft. long on a 10-percent downgrade; second, manway, 12x6 $\frac{1}{2}$  ft., 170 ft. on an 80-percent grade; third, return air, 12x9 ft., 185 ft. on an 80-percent grade. The haulage and manway slopes were to be finished by Dec. 31, 1945, and the return Feb. 28, 1946.

Coal will be loaded directly into 41-ton drop-bottom cars by Clarkson track-mounted machines. Prefabricated track will be used throughout. The coal will be weighed automatically by 20-ton Streeter-Amet scales at the bottom of the slope. Ten cars will be hoisted at a time and dumped automatically into any one of three 100-ton blending bins. Cars will remain coupled to the rope while dumping. Two 48-in. belts will convey the coal to a modern three-track tipple now under construction.

Marion County Coal Corp. Glenridge mine, Centralia, Ill., resumed operations early in the second week of January. The shaft was closed July 6, when the air shaft caved in. Normally the mine employs 164 men. Local business men contributed \$10,000 to the \$60,000 cost of repairing the air shaft, while the miners, who are stockholders in the coal corporation, bore the remainder of the expense, Bert Joliff, superintendent of the mine, said.

Mt. Olive & Staunton Coal Co., operating at Staunton, Ill., and the Litchfield & Madison Ry. have been sold by the Ogden Corp. to Jacob L. Holtzmann, New York lawyer, for about \$2,000,000 cash, it was announced Jan. 3. Mr. Holtzmann, who was elected a director of the company, according to Ogden officials, made the purchase in his own behalf as an investment. The railroad, which has 65 miles of track, connects Illinois towns of the same names.

## G.I.'s Picket Mines In Anthracite Area

Sixty-five war veterans, some wearing uniforms and carrying flags, picketed the Nesquehoning colliery of the Edison Anthracite Coal Co., four miles from Lansford, Pa., for a short time Jan. 15 because, a spokesman for the group said, they could not get jobs. They are not former employees of the company. The 1,000 regular employees at the mine refused to cross the picket lines and went home.

A representative of the veterans said they planned to picket all mines in the Panther Valley, where about 6,000 miners are employed. The Edison company asserted that all former workers at its mines who had entered military service were reemployed. The ex-G.I. spokesman said that about 500 from other areas went to work at the Nesquehoning colliery during the war. Mining, he added, is virtually the only kind of employment in the valley, and if the outsiders are not released and jobs given to the ex-G.I.'s, most of whom are about 20 years old and never had been employed before entering the service, these veterans will not be able to find employment.

When picketing by the job-seeking ex-G.I.'s spread Jan. 18, a steering committee of 20 announced it would meet next day to map out a campaign for conferring with industry officials. Evan Evans, vice president of the Lehigh Navigation Coal Co., whose three collieries in the Panther Valley also were shut down by the picketing, reaffirmed his willingness to meet with the veterans. Meanwhile, 125 miners were made idle in Centralia, in neighboring Columbia County, when 21 ex-G.I.'s and other jobless men picketed the Mahanoy Coal Mining Co. colliery.

The steering committee reported that an incomplete survey Jan. 18 showed 246 unemployed veterans in the Panther Valley. In a statement, Mr. Evans said 116 veterans who live in the valley and who never worked before had been hired by his company, besides 452 ex-G.I.'s reemployed.

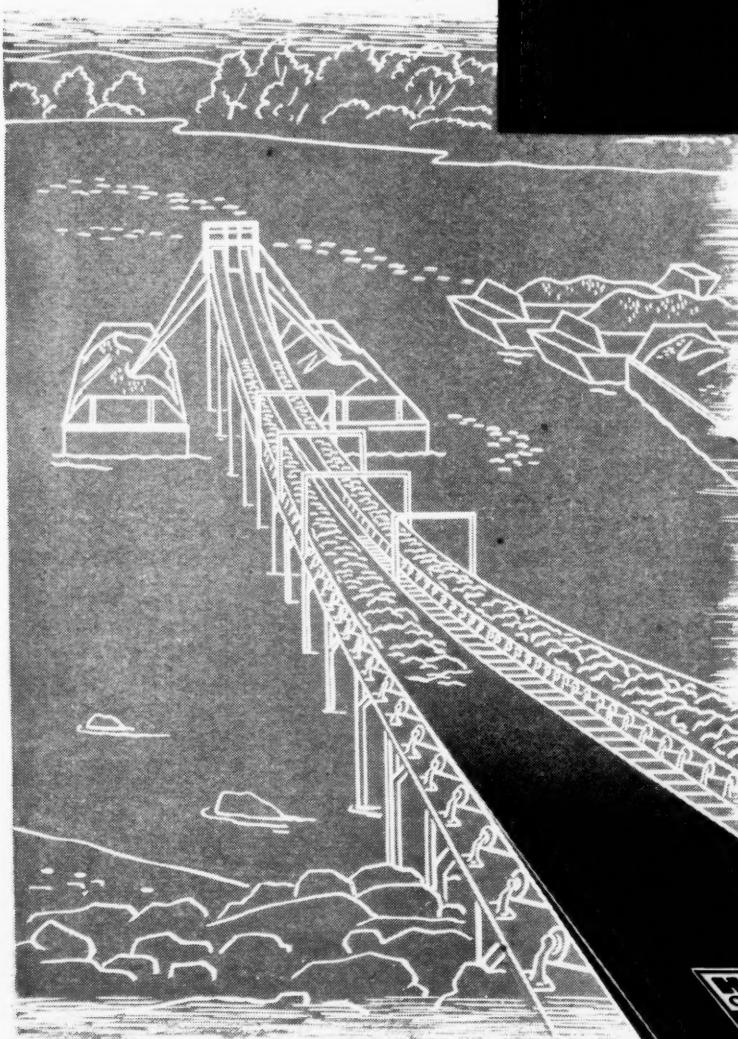
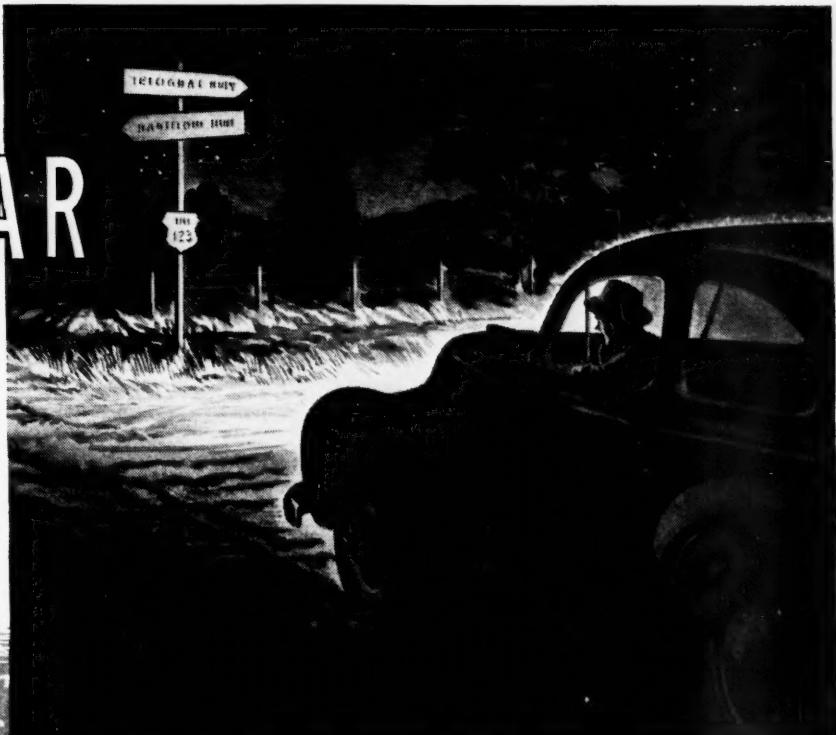
About 450 workers at Continental col-



Former G. I.'s—not ex-miners—picket anthracite mines, alleging that "outsiders" have taken jobs that should be theirs.

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YOUR RUBBER  
SUPPLY SPECIALIST**



**W**HETHER your mine or processing plant is conveniently located, or miles from the nearest village, you can count on your Rubber Supply Specialist to deliver the industrial rubber products you require to sustain your mining operation on a continuous production basis. You'll find he'll recommend exclusive Hewitt Ajax Underground Coal Conveyor Belting to help get to mine faces that normally might have to be abandoned because of difficult, unprofitable conditions. Ajax Underground Conveyor Belting is Job-Engineered to withstand this punishing duty, as well as to resist the mildew and acids present during underground operations.

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Job-Engineered Industrial Hose • Belts • Molded Goods

liery of the Hazle Brook Coal Co., Ashland, refused to enter the mine Jan. 19 when pickets appeared at the scene. Daily output of the operation is about 1,000 tons. Two other collieries of Hazle Brook, Germantown and Locust Run, closed during the second shift Jan. 18 but reopened the next day. Walter Williams, division superintendent of Hazle Brook, said he understood the Continental walkout was in sympathy with action by the other two collieries and that Continental expected to resume operations later Jan. 19.

Mark F. Brennan, president of District 7, U.M.W., said Jan. 20 that more than 6,000 anthracite miners would return the next day to the mines from which they had been absent for a week because of the picketing by veterans. Committees of the union and the veterans were to meet with company officials to devise aid for unemployed veterans.

## Contract Let For Synthetic-Fuel Lab

Secretary of the Interior Harold L. Ickes announced Jan. 21 the award of a \$249,000 contract to the Girdler Corp., Louisville, Ky., for designing, erecting and placing in initial operation a plant for the production of hydrogen and synthesis gases at the new synthetic liquid fuels laboratory now under construction for the U. S. Bureau of Mines at Bruceton, Pa. The plant is to be completed and ready for operation by Aug. 1, 1946, Secretary Ickes stated.

The specifications call for a maximum capacity of 110,000 cu.ft. of hydrogen and 120,000 cu.ft. of synthesis gas daily. These gases are required for investigation of the hydrogenation and gas-synthesis processes for producing synthetic oil and gasoline from coal and lignite—processes that will be adapted to American raw materials at the laboratory. After technical problems are solved by research and development work there the processes will be tested on a commercial scale at Louisiana, Mo., where the Bureau of Mines recently took over a government-owned war-time synthetic ammonia plant for conversion into a synthetic-fuels demonstration plant. Thus, a pattern will be provided for private enterprise to develop an American synthetic-liquid-fuels industry to supplement declining reserves of natural petroleum.

Construction work on the laboratory buildings at Bruceton is moving steadily ahead, according to reports received by Dr. R. R. Sayers, director of the Bureau of Mines. The Girdler Corp. has indicated that engineering work will begin at once on the Bureau of Mines unit.

## Pursglove Mines Win Coal Age Awards

Coal Age awards to the two mines of the Pursglove Coal Mining Co., operating in Monongalia County, West Virginia, were presented to officials and employees Dec. 27 by Joseph Pursglove Jr., president of the

company, at an informal dinner. The awards, made by the editors of *Coal Age* in conjunction with the Solid Fuels Administration for War, were given to the No. 15 mine for increasing both production and efficiency in the first seven months of 1945. The company's No. 2 mine was recognized for increasing its efficiency.

At the dinner, talks were made by officials and guests, in which a number of factors relating to the coal industry were mentioned. Mr. Pursglove emphasized his belief that northern West Virginia is just coming into a golden era in coal mining; J. R. Pursglove, personnel director, stressed the importance of making the industry safe and therefore attractive to young men seeking employment; E. B. Rowe, general superintendent, discussed various angles of mine management; Dr. J. C. Pickett spoke on the importance of reclaiming those injured in the mines to restore their ability to earn a livelihood; Brooks Cottle, editor of the *Morgantown Post*, recalled the progress made in the mining area in northern West Virginia over a period of 30 years; Forest R. Thompson

son, of the *Voice o' Labor*, spoke along general lines regarding the industry, and George A. Crago, of the *Dominion-News*, touched on the improved relationship between management and workers in the mines in northern West Virginia.

## New British Mine To Be Modern

An important step in the modernization of Britain's coal industry was taken Jan. 11, according to a wireless dispatch to the *New York Times*, when Col. O. C. Lancaster broke ground in New Calverton, Nottingham, for a mine expected to produce 1,000,000 tons annually for 125 years and to set new standards of efficiency and decent working conditions for miners.

The National Union of Mine Workers on the same day laid before Emmanuel Shinwell, Minister of Fuel and Power, a "Charter of Demands," advancing concrete proposals for the betterment of working conditions and



Brooks Cottle, editor, *Morgantown Post*, speaks at dinner of Pursglove Coal Mining Co.'s operating staff when "Victory Production" and "War Production Efficiency" awards were made. Left to right: Joseph Pursglove Jr., president, Pursglove Coal Mining Co.; Brooks Cottle; Harry Suter, superintendent, Pursglove No. 15 mine; George Crago, labor columnist, *Morgantown Dominion-News*; and Jake Ponceroff, general mine foreman, Pursglove No. 15



Left to right: E. B. Rowe, handling "War Production Efficiency" awards at dinner to Louis Quinn, general mine foreman, Pursglove No. 2 mine; Charles Swope, superintendent, Pursglove No. 2 mine. Glenn Steele, Pursglove company traffic manager, and Alvin Hood, chief engineer, look on.

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the attraction of new workers to the industry. If the proposed plans are carried out, many of the improvements called for in the miners' carefully prepared document will be realized in the new mine and auxiliary installations.

Intensive use of electricity for power, in accordance with the recommendations of the Reid report, will eliminate much smoke and dirt and the use of up-to-date techniques for the extraction of coal is expected to increase productivity considerably above the British average.

Besides comfortable homes for the workers, the development will include a training center in which unions and management will cooperate to provide not only vocational but physical and cultural education and recreation.

## Soviet Develops Karaganda Fields

Karaganda coal fields, situated in the central part of the Kazakh Soviet Socialist Republic, almost midway between Sverdlovsk and Alma Ata, have become the Soviet Union's third largest producer—after the Don Basin and the Kuznetsk mines, in Siberia. Before the development of these fields, coal was sent from the Kuznetsk Basin to the Urals, iron ore being shipped on the same trains on the return trip. This was a very long haul and placed a great strain on the Trans-Siberian main line. Now, with the extensive working of the Karaganda mines, coal can be shipped to the Urals over a shorter, more direct route. A railway has been constructed from Stalinsk, in the Kuznetsk Basin, westward to Magnitogorsk, in the Urals, which passes very close to Karaganda. This now tends to make the Kuznetsk development an independent unit,

and not part of the Urals-Kuznetsk combine, as originally planned.

Prior to 1917, the Karaganda mines consisted of one small pit. By 1938 the mines had been developed to such an extent that 4,150,000 metric tons was extracted in that year. From a tiny center, the city of Karaganda itself had by 1939 grown to a population of 165,937 people; it has developed to a large new modern city with schools, hospitals, libraries and apartment houses. Whereas 28 years ago there was no school above that of primary-school level in all Kazakhstan, today there are 1,000 students in a single mining college.

## Coal Emergency Declared in New York

Coal scarcity in New York City was alleged to have reached the stage Jan. 18 where it became necessary for Mayor O'Dwyer to declare a state of emergency. He announced he was taking the step at the request of the Health Department to assure an equitable distribution of coal for residential use.

Mr. O'Dwyer also announced that the city had reopened 50 emergency coal stations in the Bronx, Brooklyn, Queens and Richmond, where coal in 100-lb. bags could be bought by consumers on a cash-and-carry basis at ceiling prices. In Manhattan, he said, the small neighborhood coal dealers would sell the 100-lb. bags, and if this did not work out, emergency stations would be established. Business for the new stations apparently was not too brisk, however, at the end of January.

The shortage chiefly concerned coal for household purposes. Buckwheat, used largely for that purpose, had not come through, the dealers said, because of transportation difficulties. They said there also was an

underproduction of anthracite. Office buildings and industrial plants had not felt the effects of the shortage, and it was pointed out that many of these could use substitutes.

## Ohio Strip Operators Seek Hands-Off Policy

Strip operators in Ohio were prepared Jan. 17 to attempt to convince the special commission set up by the last Legislature that the State does not need any laws to regulate their operations. Opposition of the producers to laws proposed by Governor Lausche are based on three points: They contend that land that is being stripped is insignificant in relation to the total area of the State, that strip mining is economically beneficial to the State and that the stripers already have in operation a plan to reclaim the spoil banks and make them of greater value than they were before the land was stripped.

Operators told the commission that the State has neither the legal right nor the economic justification to legislate burdens on strip-mine producers.

James Hyslop, general manager, Hanna Coal Co., said that strip-mined coal was cheaper than deep-dug coal and that Ohio's production kept the coal business going. He added that Ohio consumes considerably more coal than it produces and that strip-mined coal could be considered a net increase in the State's total output. The presence of this low-cost coal, he said, has attracted many industries to Ohio and will bring more. The power plant at Philo and new plants in Jefferson and Belmont counties, giving employment to hundreds of persons, were cited as examples.

He emphasized that strip mining is an important conservation measure, pointing out that it recovers 90 percent of the coal in the area mined, while deep-mine operations recover only 50 to 60 percent because the rest must be left to support the roof. "Conservation of our coal resources is just as important as the conservation of any of our natural resources," he added.

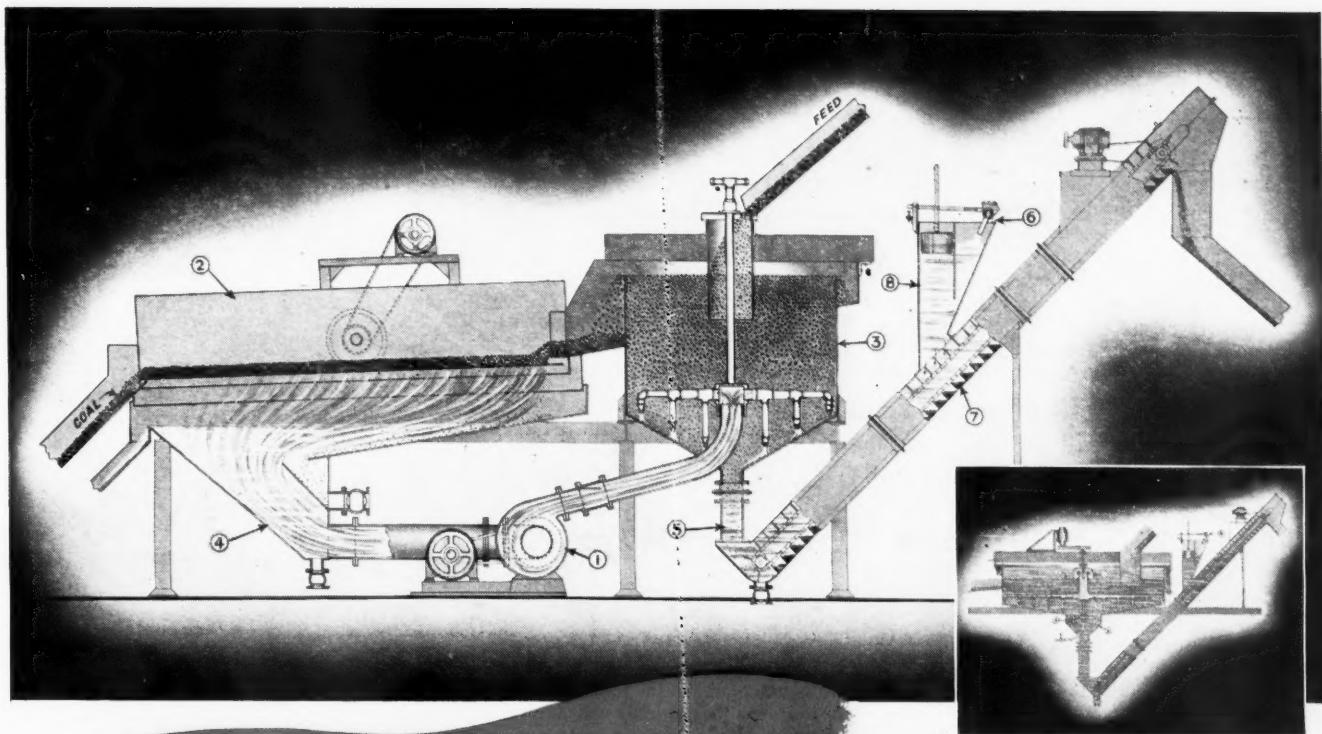
George Thurnburg, counsel for the Ohio Coal Association, said a severance tax against coal strippers would be in violation of both the State and national constitutions. "If a tax is levied upon the production of coal," he said, "it must be a general tax and not a tax to restore some private individual's property to maintain standard of tax value." He argued that all strip-mining operations, including clay, gravel, stone and sand, would have to be taxed as well as coal to keep the tax from being discriminatory against coal operators.

L. C. Moseley, of the Marion Steam Shovel Co., averred that the shovel industries in Marion, Lima, Lorain and other Ohio communities would suffer if striping operations were outlawed.

R. L. Ireland Jr., president, Hanna Coal Co., told the commission Jan. 25 that it should recommend that Ohio educate its citizens about what the State is already doing instead of regulating strip-mining companies. He defended the right of the



View of one of strip mines in the Karaganda field, which have been responsible in part for its increased output.



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stripping operators to do anything they wanted with the land they owned or had leased for strip mining. He declared that the State had no more right to use its police power to control coal strippers than it had to control bad farming practices, which also are destroying the soil.

Mr. Ireland asserted that the stripping operators should be congratulated for what they are doing and not condemned. He said that 75 percent of the land that can be stripped is submarginal land and that the stripping operations leave it in better shape than it was in the beginning.

## Nationalization Bill Is Rugged Fare For British Business in General

LONDON—First of the Labor Government's measures for socialization of basic industries, the Coal Industry Nationalization Bill was presented to Parliament on Dec. 20 by Emmanuel Shinwell, Minister of Fuel and Power. Supplementing the cablegram included in the January Coal Age, p. 121, the McGraw-Hill London News Bureau supplies the following details:

[The nationalization bill was approved by the House of Commons without a record vote Jan. 30, after two days of debate, according to press dispatches.]

With its 58 clauses and three schedules—purport of which may well set the pattern for other transfers from private to national ownership and from private to public management—the bill constituted rather rugged Yuletide fare not only for the colliery companies but for British business in general.

The bill's main proposals are as follows:

1. A National Coal Board of nine persons to acquire the nation's colliery undertakings, manage the industry, and secure its efficient development.

2. The Board to be subject to general directions by the Minister of Fuel and Power, but free to establish its own organization and to handle day-by-day operations.

3. The Board to have £150,000,000 to meet capital requirements for the first five years and the right to borrow an additional £10,000,000.

4. Two consumers' councils—one industrial and the other domestic—to advise the Minister.

5. Compensation to be determined by a special arbitration tribunal according to terms of reference agreed on between the government and the Mining Association.

6. Compensation to be paid largely in government stock, which will be unmarketable without the approval of the Treasury.

The provisions of the bill form an integral part of the scheme now in preparation for the reorganization of the industry. They provide for the nationalization of the production and distribution of coal and also for the public ownership of certain allied activities, such as coke ovens, manufactured-fuel plants, electric plants, transportation works and merchandising property.

In addition to its primary duty of coal production the Board also is charged with re-

One of the first bills to be introduced in the 1946 session of the Kentucky Legislature was House Bill No. 3, by C. W. Taylor, of Hancock County, to regulate strip mining of coal, provide for conservation and improvement of lands after strip-mine operations have been completed.

Another early measure, Senate Bill No. 3, by Douglas Hays, of Floyd County, in the eastern Kentucky coal field, would require all existing corporations and all organized in the future to elect to operate under workmen's compensation prior to being permitted to conduct business in the State.

engage in activities similar to those pursued by colliery companies. These include prospecting and boring for coal, the further treatment of coal and the production of by-products.

The Board also may provide facilities for training, education and research, but these must be coordinated through the Ministry upon whom rests primary responsibility for these activities. Although the Board is not precluded from selling coal to the public in the same way that some of the colliery companies do at present, it is not intended to cut out retail distribution by retail enterprise.

The Board is to consist of a chairman and eight other members, all appointed by the Minister of Fuel and Power. Selection is based on proved efficiency in industrial and commercial administration, including the organization of labor. The Board is intended to work as a business corporation, free of the Civil Service, and members (it is undecided whether they shall be full or part time) are to be paid on a commercial scale. It is expected that one or two members will be chosen from the present management and one from the National Union of Mineworkers.

Freedom of action is to be limited only as to general policy and in framing development programs involving substantial outlays of capital, where the Board will have to act on lines approved by the Minister—a stipulation designed to bring development schemes within the orbit of the government's investment and employment policies.

There is no indication in the bill as to the establishment of regional boards, but, since it is acknowledged that too much centralization must be avoided, it seems likely that regional and district organizations of some sort will have to be set up. In addition, machinery of consultation with the National Union of Mineworkers will be required.

The Board will be liable to make payments to the Minister to recoup Crown expenses and liabilities incurred in acquiring the assets of colliery undertaking and in providing capital. It will be subject to taxation and rates and will have to pay interest and sinking-fund money on sums provided by the Treasury. In general, the Board is expected to insure revenues sufficient to meet all outgoings chargeable to revenue account on an average of good and bad years.

The provision of £150,000,000 of new money for the requirement of the industry is regarded in many quarters as the best thing in the bill and an indication that the Minister envisages the transfer of ownership primarily as a preliminary to real economic changes. This money is to be spent for new mines and to increase mechanization at the coal face, institute underground man-riding facilities and the use of locomotive haulage, etc., in the older mines—in brief, to carry out the recommendations of the Reid Report.

The Industrial Coal Consumers' Council and the Domestic Coal Consumers' Council will consider all matters affecting the sale and supply of coal and will inform the Minister when they think action is required. The membership of these councils is to be broadly based and it is expected

### COAL ACTIVITY

#### Bituminous Coal Stocks

	Thousands	—P.c. Change—	
		Net Tons	From Nov. 1
Dec. 1	1945	1945	1944
Electric power utilities	15,137	+25.7	-13.2
Byproduct coke ovens	4,607	+31.6	-31.6
Steel and rolling mills	605	+10.4	-22.7
Railroads (Class I)	10,056	-0.2	-30.3
Other industrials*	14,287	.....	-23.7
Total	44,692	+2.2	-14.8

#### Bituminous Coal Consumption

	Thousands	—P.c. Change—	
		Net Tons	From Nov. 1
Dec. 1	1945	1945	1944
Electric power utilities	5,480	-1.5	-19.8
Byproduct coke ovens	6,798	+21.0	-12.3
Steel and rolling mills	808	+1.3	-11.0
Railroads (Class I)	9,861	+1.7	-7.9
Other industrials*	11,618	+10.8	-13.0
Total	34,565	+7.6	-12.8

\* Includes beehive coke ovens, manufactured-gas plants and cement mills.

#### Bituminous Production

December, 1945, net tons	46,100,000
P.c. change from December, 1944	-9.1
January-December, 1945, net tons	576,000,000
P.c. change from Jan.-Dec., 1944	-7.0

#### Anthracite Production

December, 1945, net tons	3,972,000
P.c. change from December, 1944	-12.4
January-December, 1945, net tons	54,612,000
P.c. change from Jan.-Dec., 1944	-14.3

#### Sales, Domestic Stokers Vs. Oil Burners

	Stokers	Burners
November, 1945	21,434	20,994
P.c. change from Nov., 1944	+364.8	+470
January-November, 1945	112,432	100,000
P.c. change from Jan.-Nov., 1944	+233.4	+244.1

#### Index of Business Activity\*

Week ended Jan. 26	150.5
Month earlier	173.1
Year earlier	229.4

\* Business Week, Feb. 2.

#### Electric Power Output†

Week ended Jan. 26, kw.-hr.	*1,040,000,000
P.c. change from month earlier	+7.7

\*Tentative

† Edison Electric Institute.

# THE FAILURE OF “FACT-FINDING”

THE PRESIDENT has asked Congress to grant him authority to appoint fact-finding boards to deal with nationally important labor disputes. Most citizens would like to see some reasonable and objective solution of the industrial strife that now is disrupting reconversion. Unfortunately, the record of the “fact-finding” procedure indicates that any claim of impartiality for this process is a gross misrepresentation.

The Administration bill would authorize the President to appoint such boards in cases certified to him by the Secretary of Labor. Each board would report to the President “its findings of fact and such recommendations concerning the dispute as the board deems appropriate.” Its facilities and staff would be provided by the Secretary of Labor. The bill provides for an interval of not more than 30 days known as a waiting or “cooling off” period during which it would be “unlawful” (though no penalties are specified) for anyone to promote or encourage work stoppages.

Because the Administration did not wait for Congressional action upon its proposal, but appointed a number of fact-finding bodies to deal with current emergency cases, we have been afforded at least a partial preview of how the procedure may be expected to work out if laws establishing it are passed.

If the reports handed down by the fact-finding panels in the General Motors and oil disputes may be regarded as representative, it can be stated conclusively that Government-appointed “fact-finding” boards will concern themselves to only a minor degree with the establishing of facts. A far greater share of their effort will be concerned with the speculative business of forecasting future output and production efficiency and appraising the “ability to pay” of the companies involved. But the predominant emphasis will be placed upon framing recommendations for settling the disputes in line with announced Government wage-price policy.

In short, the procedure essentially will be one of registering with the public a government opinion as to how far wages may be raised in the cases at issue without raising price ceilings. Both the General Motors and the Oil Panels stated, in quite explicit terms, that this was their conception of the job assigned them.

## “Fact-Finding” in Auto and Oil Disputes

As the General Motors Panel phrased it: “This board subscribes to, and has been guided by, the national wage-price policy” — which it summarizes as calling for wage increases to maintain take-home pay at wartime levels, to the degree possible without inflationary price rises.

The Oil Panel was even more forthright in the statement of what it was supposed to do. “In the judgment of the panel,” it declared, “the earnings of the workers must be as high as is consistent with both the mainte-

nance of the stability of the price structure and the provision for reasonable returns to the owners of industry.” In other words, prices and the return to investors are to remain fixed, with labor entitled to an ever-increasing return up to the limit of what the traffic will bear.

Having thus outlined their respective conceptions of the job, each panel proceeded to carry out its mission.

The Automobile Panel recommended that General Motors increase its basic hourly wage rates by 19½ cents, which amounts to about a 17½ per cent increase on the company’s average hourly wage of \$1.12. The Oil Panel recommended an 18 per cent increase in basic hourly wage rates, or an additional 21 cents to the average wage rate of \$1.20.

The General Motors recommendation was based almost exclusively upon the Panel’s calculation that a 19½ cent raise would keep weekly take-home pay equal to that earned in 1944 when the work-week averaged 45.6 hours. The calculation turned on an estimate of what the effective work-week was likely to be in 1946.

The Oil Panel’s recommendation appears to have been based on a more complex but no more conclusive accounting. After calculating that the maintenance of July 1945 take-home pay after 40-hour shifts were restored would require a 22 per cent increase in straight-time hourly wages, it recommended that an 18 per cent increase be made. It accounted for 9½ per cent of this by noting that this was needed to cover cost-of-living rises, and explained that the rest was justified by a combination of factors including loss of premium overtime pay, higher productivity, and settlements already negotiated. Since the Panel gave no indication of the weight given to these several factors, it may not be unfair to assume that the last-named was given preponderant importance, since 18 per cent was the increase already granted in collective bargaining by Sinclair and certain other oil companies.

## Higher Pay Without Higher Prices

Both panels stated that the pay increases recommended could be met without raising price ceilings, but neither documents its case on this score with very conclusive “facts”.

The Oil Panel confined its observations on this account to the statements that only one company in its group had pleaded “inability to pay” and that the industry was in a generally profitable position during 1943 and 1944.

The Automotive Panel stated that, under a number of assumptions about the 1946 operations of General Motors which it believed to be valid, the Company would have higher earnings than it had in 1941, its previous record year. It specifically stated that its findings in the case were not applicable outside the

automobile industry, but it recognized that the General Motors settlement would more or less determine the settlements of other automotive companies. It stated that it had not been able to arrive at a clear conviction as to the ability of other auto makers to pay similar wage advances, but it dismissed the issue by observing that they could expect to operate at full capacity in 1946, and that this should provide savings to offset the increased wage expenditures.

From the management point of view, one of the most serious limitations in the panels' procedure was their failure to deal with any of the Company claims put forward. In ordinary collective bargaining the demands of both sides are advanced and concessions in one direction are traded for concessions in the other. Here, although the companies involved had insisted upon their need for guarantees against contract violations and wild-cat strikes, and for other union concessions, nothing but the wage issue was considered by the "fact-finding" bodies. The General Motors Panel specifically recommended that the wage increase of 19½ cents be granted, but that otherwise "the status quo prevailing before the strike be restored by the reinstatement of the 1945 contract between the parties." Handled thus, fact-finding becomes indeed a wholly one-sided exercise.

Both panels accepted, quite uncritically, the general position taken by Government spokesmen that wage increases are inflationary only if they are directly translated into price advances. It should be obvious that all wage increases add to the inflationary pressure, if made at a time like the present when consumer purchasing power far outstrips the volume of goods and services available to satisfy it.

#### "Fact-Finding" Dodged in Steel and Rails

It is ironic, too, that even while the Automotive and Oil Panel groups were holding the "government policy" line, the President and his Reconversion and Stabilization Directors were busily at work trying to dent it. In the steel dispute, although price rises in this industry have a particularly sharp inter-industry impact, hearings by the appointed fact-finding board were deferred while negotiations were carried forward by the President and his advisors under which the industry was offered a price increase of approximately \$4.00 a ton on condition that U. S. Steel and the United Steelworkers agree upon a mutually acceptable wage boost. It is hard to avoid the cynical conclusion that wage increases constitute the major administration policy, and that the principle of not translating them into increased prices is sacred only in those cases where there can be some reasonably plausible showing that wages may be raised without price advances.

Much the same general conclusion — that the "facts" are controlling only if they support a substantial wage increase — is sustained by the history of the administration of the Railway Labor Act of 1926, often cited as a glowing example of how "fact-finding" by so-called Emergency Boards of Presidential appointees has served to prevent strikes on the railroads. It is true that reports

of almost all of the 31 Emergency Boards appointed to look into threatened railway strikes in the 20 years since the act was passed have provided the basis for a settlement of the disputes in question. The fact — a real fact — remains, that in 1941 and again two years later the wage adjustments found appropriate by Emergency Boards in major railway labor disputes were revised upwards at the White House after the unions involved rejected them as unsatisfactory and threatened to strike. The second upward revision was made after government seizure of the railroads to prevent a national transportation tie-up. When the "facts" did not indicate a large enough wage increase to satisfy the union and the Administration, the "facts" went out the window.

It would be irresponsible to deny the importance of finding some tenable solution of current disputes that threaten to completely disrupt the reconversion process. But upon the evidence of experience, "fact-finding" boards cannot be expected to operate according to the common conception of their function — as agencies designed to sift out for the public an objective and significant weighing of the facts behind conflicting claims.

#### Without Principles Facts Mean Little

Facts, if they are assembled upon a sufficiently partisan basis, can be made to document almost any case one wishes to establish. The major difficulty in marshalling facts to resolve wage disputes is that there are no agreed-upon principles to determine the levels at which wages should be set. In the absence of such principles, it is inevitable that "fact-finding" boards, appointed by the Administration, manned largely by those who helped develop and administer Administration wage policies, and depending for technical assistance upon Administration Departments, will serve merely to implement Administration wage policy.

If Government means to reassert its wartime authority to fix wages — an objective specifically disavowed by the President and seemingly wanted by no one — it should accept the responsibility directly, rather than operate to that end through "fact-finding" boards which are independent in theory, but which cannot be so in fact.

The failure of the brand of "fact-finding" now urged upon Congress by the President is evident. Therefore, we must look for a solution along other lines.

What is needed is for labor and management to agree upon the principles that should govern the determination of wages under free collective bargaining. When such agreement is reached, then and only then, can fact-finding become an objective and useful instrument for settling wage disputes.



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that the Domestic Council will include someone to speak for the ordinary housewife.

The establishment of the Board is a simple matter compared with the transfer and assessment of the coal industry's assets. The government intends to make the transition from private to public ownership as rapid as possible, but, since there are 850 colliery undertakings involved, the chances are that it will take at least two years to complete the job. Meanwhile, the industry will receive £9,500,000 a year.

In deciding exactly what the coal industry is, properties have been divided into three categories. The first, which consists of the mines themselves and any coke ovens, manufactured-fuel plants, electric or transport works operated by colliery concerns, and welfare installations, are to be taken over universally and by compulsion.

A second category, consisting of stores, brickworks, waterworks, houses, farms, etc., are to be taken over at the option of either party—that is, if the State wants to buy them it can do so and if the present owner wishes to sell he can require purchase.

The third category, consisting of manufactured-fuel plants operated by non-colliery concerns and all other colliery assets except iron and steel works—which are specifically excluded—can be taken over at the option of either party with the right of arbitration in case of disagreement.

The present owners are to be compensated on the basis of the annual revenue that the industry could reasonably expect to maintain if it were not taken over by the government. The Arbitration Tribunal, consisting of two judges and an accountant, will fix this figure and also determine the number of years for which the expected revenue will be capitalized.

This will give the total figure to be paid for the actual coal-mining assets of the entire industry—estimates of which now run anywhere from £100,000,000 to £240,000,000. A central valuation board will then allocate the sum between the districts. At the same time, district valuation boards will value the assets of each undertaking and their assessments will then be adjusted to the amounts allocated to each district. This procedure is very similar to that used for the nationalization of coal royalties in 1938 under a Conservative government.

Subsidiary assets to be taken over by the National Coal Board, such as coke ovens, railway cars, etc., will be simply assessed by the district boards and paid for outside the total sum fixed by the tribunal. Full return in cash will be made for all capital outlays made since Aug. 1, 1945.

But the bulk of the compensation payments will not be made in cash, as was expected until recently, but by the issue of a government stock to the colliery companies. This stock will not be marketable except with permission of the Treasury. Although permission is to be granted to colliery companies going into liquidation and probably also to undertakings planning productive developments in other lines, this provision is being widely criticized in the business community as a tyrannous refusal by the government to pay its debts honestly and in negotiable value.

The restrictions on sale of stock apparently have been imposed on the Ministry of Fuel and Power by the Treasury with the intention of keeping a flood of new money from entering the money market and thus upsetting Chancellor of the Exchequer Dalton's drive for cheap money. But the Economist says of this: "If Mr. Shinwell cannot pay for the mines without upsetting Mr. Dalton's plans, then the government should decide between them which should wait for the other."

This restriction has been the only real shock administered by the bill to the business community in Britain. It has no expectation that the bill can be defeated in Parliament but looks forward to the testing time when the ultimate success or failure of the mining industry under national ownership will go far to influence the attitude of the British people on the respective merits of public and private enterprise.

Laborites have long contended that nationalization would remove the last obstacles to better performance and harmonious relations within the industry. In the words of the London Times, "the government and the miners have had their way, and they will be judged by the results."

The Labor Government plans to nationalize only 15 to 20 percent of the British coal industry and service under its five-year

plan, Mr. Shinwell told members of the American Chamber of Commerce Jan. 23. "But we shall demand of private enterprise that it do its utmost to achieve complete efficiency," he added.

The Fuel Minister explained that by tradition of the House of Commons he was not allowed to anticipate the speech he was to make Jan. 29, when he was to introduce the coal bill. He contented himself with the general argument that coal is being nationalized solely because the industry, under its present owners, has proved "completely unprogressive and inefficient."

A 12-point plan prepared by the National Union of Mineworkers to encourage recruitment in the coal-mining industry was adopted by the executives of the union Jan. 10. It was to be sent at once to Mr. Shinwell, giving the Minister an opportunity to discuss the proposals with union leaders Jan. 14. The proposals are:

1. Modernization of existing pits and the sinking of new ones, while observing the standards laid down in the Reid Committee report; the provision of adequate compensation for those who become redundant; and the general application of the day-wage system.
2. Adequate and careful training of youth; a clearly defined scheme of promotion; and provision of further training where workers desire to enter a colliery technician's career.
3. Introduction of new safety laws, especially to suppress the development of industrial diseases.
4. Payment of compensation for incapacity due to industrial injury or disease, and the provision of an adequate income for the dependents of those who are killed or die from an industrial disease.
5. Average wage standards shall not fall below those of any other British industry.
6. Restoration of the seven-hour day for underground workers; introduction of the 40-hour week for surface workers; and establishment of the five-day week without loss of pay.
7. Continuation of the principle of the guaranteed weekly wage when the Essential Work Order is withdrawn.
8. Payment to be made for two consecutive weeks' holiday and six statutory holiday days in each year.
9. Provision of pensions for mine workers who cease to be able to follow their employment after 55 years of age, and payment of a subsidiary pension from the industry.
10. Building of new towns and villages of a high standard, and provision of adequate transport services.
11. Complete reorganization of health and welfare services.
12. Compulsory medical examination, with training arrangements at full wages pending employment as a skilled workman in another industry, if withdrawn from the coal-mining industry on medical grounds.

The document adds: "The National Union of Mineworkers, having in mind the manpower crisis which exists, and recognizing the complete dependence of our country's economy on coal production, calls on the government to give guarantees that

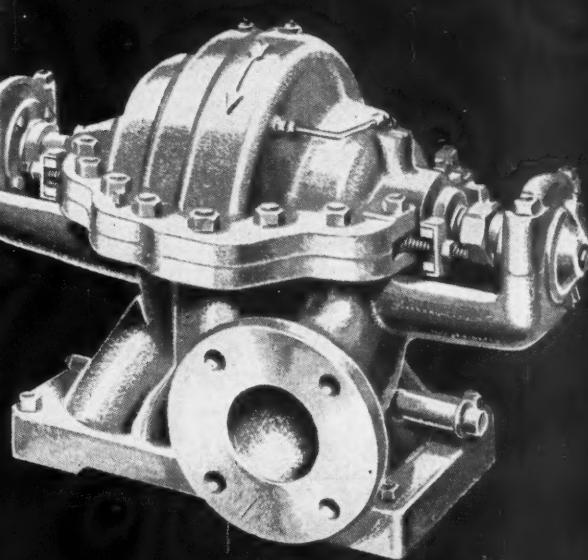
## MEETINGS

- American Mining Congress: 48th annual meeting, Feb. 13, Statler Hotel, Washington, D. C.
- American Institute of Mining and Metallurgical Engineers: annual meeting, Feb. 25-28, Palmer House, Chicago.
- American Society for Testing Materials: spring meeting, Feb. 25-March 1, Pittsburgh, Pa.
- National Coal Association: annual convention, March 14 and 15, Hotel Cleveland, Cleveland, Ohio.
- Midwest Power Conference: Under sponsorship of Illinois Institute of Technology, April 3-5, Palmer House, Chicago.
- American Mining Congress: annual coal convention, April 29, Netherland Plaza Hotel, Cincinnati.
- Mine Inspectors' Institute of America: 26th annual convention, June 3-5, Sterling Hotel, Wilkes-Barre, Pa.
- Stoker Manufacturers' Association: annual meeting, June 3 and 4, Broadmoor Hotel, Colorado Springs, Colo.
- American Coal Sales Association: annual convention, June 6-8, Homestead Hotel, Hot Springs, Va.
- American Retail Coal Association: annual convention, June 11 and 12, Morrison Hotel, Chicago.

## Can ANYONE make a Pump?

Well, there's no law against it—except perhaps the "law of survival." It's a question of what kind of pump you want—and how good you want it to be. If you want a pump that will squeeze the last fraction of a cent in value out of the monthly power bill, that is designed to the very limits of hydraulic knowledge—built with the fine tools and complete facilities that such precision design requires—you'll want a Fairbanks-Morse pump.

There's every size and type of centrifugal pump used in industry in the Fairbanks-Morse line.



Westco pumps: precision-built, broad in application.

WHEN YOU BUY a Fairbanks-Morse, Pomona or Westco pump, you get a design which is the result of accumulated years of research in not only our own laboratories but those of the universities' scientists whom we have retained!



For all vertical turbine pump work—the Pomona line.

THIS DESIGN and unlimited manufacturing facilities, which only the largest pump manufacturers can offer you, combine to give you pumps superior in performance and reliability.

ANYONE CAN MAKE A PUMP—perhaps! But for proved value, skilled service—regardless of the type of pumping requirements or the amount of liquid to be moved—Fairbanks-Morse is an unquestioned leader. Call your nearest Fairbanks-Morse distributor or branch office.

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A NAME WORTH REMEMBERING  
**PUMP DIVISION**



## SCHRAMM AIR COMPRESSORS FURNISH ALL THE AIR YOU NEED IN MINE WORK!

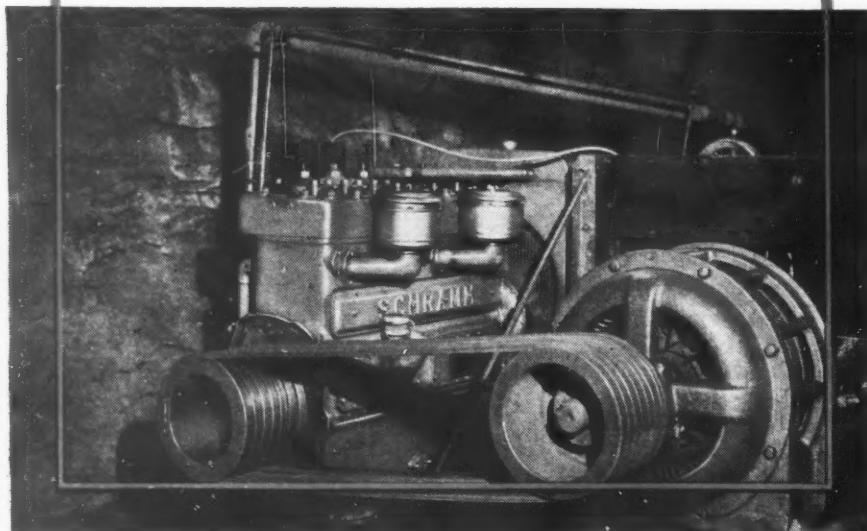
The versatility of Schramm's Air Compressors—both portable and stationary—makes them the all-round air compressor for your mine!

Schramm Air Compressors are designed for heavy duty, continuous service, with minimum attention. They are built in sizes ranging from 20 to 600 cu. ft. displacement, in every type of mounting and assembly.

Illustrated is a Schramm installation deep in a mine. This compressor—as all Schramms—is 100% watercooled, compact and lightweight, and has mechanical intake valve and forced feed lubrication.

Make your mining easier by using Schramm Air Compressors. Write today for construction details on these compact, sturdy units.

**SCHRAMM INC.** THE COMPRESSOR PEOPLE  
WEST CHESTER  
PENNSYLVANIA



effect will be given to the foregoing measures in accordance with a timetable and a progressive plan.

"The only permanent source from which new manpower can be drawn and adequately trained is youths under 18. In the past the maintenance of the industry's manpower has come mainly from the ranks of the mine workers' sons. The mining community, however, is not willing to accept a special responsibility for the supply of new mining labor. Young persons will only be attracted to the industry in sufficient numbers when it offers conditions of employment which compare favorably with those offered in other industries."

W. Lawther, president of the union, stated that the miners' leaders would meet Fuel Minister Shinwell Jan. 14 to discuss certain problems arising out of the bill to nationalize the mines. There was to be a special meeting of the national executive in the afternoon to consider the Minister's reply.

A. Horner, production officer of the National Union of Mineworkers, told the London Trades Council Jan. 10 that the situation in which they found themselves was so serious "as to menace the implementation of the plans that have been drafted by the Labor Government for the coal industry."

The cause of the shortage, said Mr. Horner, was that they had not enough men; and in ten years, if there were no replacements, there would not be a miner left in the country. Normal recruitment was less than 10,000 a year to meet a loss of 70,000 a year. "Whatever might be said about the undesirability of people working in the mines, we must tell you that if some people do not work in the mines millions of people in this country will have no work at all."

"This situation cannot be changed in a short time; not by the Labor Government or even by a still more revolutionary government. We have been given a heritage of inefficiency and worse by private enterprise over the last 25 years. It is wrong to permit the enemies of the working class to attach the blame for that mismanagement to the Labor Government, to the labor movement, or to the government's plan for nationalization.

"This message must be delivered to prevent disillusionment and misunderstanding among the broad masses of the people who may be called upon to suffer serious inconvenience."

At a meeting Jan. 10 of the National Joint Negotiating Committee of the coal-mining industry the miners' representatives presented a claim for a fortnight's annual paid vacation. The owners replied that they could not agree; if the claim was to be pursued it must go to the independent tribunal. The present arrangement is for one week's vacation.

### Cassidy Quits Weirton To Join Consol

Samuel M. Cassidy has been appointed vice president of the Consolidation Coal Co. in charge of its Kentucky operations, effective Feb. 1. Resigning as vice president of the Weirton Coal Co. to take the new post;



Samuel M. Cassidy

he will have headquarters at Jenkins, Ky. Consolidation also announced Jan. 16 that Mr. Cassidy will become president of a new company to operate the Kentucky properties. Leave of absence has been granted to Vice President M. H. Forester to take charge of administration of coal problems in the United States zone of occupation in Germany.

Weirton Coal Co. has promoted Assistant Manager George M. Rigg to succeed Mr. Cassidy as manager in charge of operations.

## Sales Manual Explains Coal and Its Uses

A reference book and sales manual pertaining to coal and its uses, prepared and issued by the Red Jacket Coal Corp., Columbus, Ohio, presents in easily readable form, with illustrations, the elementary technical data with which sales representatives of any coal company would need to be familiar.

The various chapters cover the origin, development and classification of coal; heating value; and discussions of the properties of coal ash, coking and free-burning coals; screening and sizing. Descriptions of coal mining, preparation methods, sampling and analysis are included. Other chapters deal with boiler-plant equipment, space heating and the storage of coal, with charts, graphs and halftones.

## Anti-Smoke Campaign Gains Headway

Akron, Ohio, is to join the growing list of communities where anti-smoke drives are under way, the first step in the city's proposed educational campaign having been taken Jan. 14 by Mayor Charles E. Slusser, who formally invited the Coal Producers' Committee for Smoke Abatement to send its engineers into the city. The task will bring in from 12 to 16 engineers, according to C. A. Eder, Coal Exchange secretary.

A campaign against smoke in Youngs-

40% MORE HOLES PER DAY

HYDRAULIC FEED

FINGERTIP CONTROL

SET TO ANY LEVEL

Actual operating records of the many machines in use prove that statement. The hydraulic feed plus fingertip control plus individual operating jacks make the job of horizontal drilling fast and sure even through the toughest formations. Compact, heavy and rugged, the **McCarthy** handles augers 4" to 9" Diameter—and drills horizontally 150 ft. Easily moved from job to job. Designed by a Strip Mine Driller who knows what operators want in drilling machines.

### SEE THE McCARTHY BEFORE YOU BUY

In writing, be specific as to what you are drilling, depth, etc., so we can give you factual data.

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**SALEM TOOL CO.** SALEM, OHIO

Drilling and earth boring specialists. Manufacture all types of augers from 1 1/4" to 8" Dia. and distribute complete line of mining tools and supplies.

## HELP YOURSELF BY HELPING YOUR DEALERS

### • Freezeproof your coal with • • • • **WYANDOTTE CALCIUM CHLORIDE**

Dealers have a right to complain when coal is frozen in the car. It means lost delivery time and extra labor—and the remedy is so simple and economical! All you have to do is treat your coal with Wyandotte Calcium Chloride.

Coal freezeproofed with Wyandotte Calcium Chloride will unload readily even in sub-zero weather, leaving the car the same grade as when loaded. No special equipment is required to handle Wyandotte Calcium Chloride for freezeproofing.

Your dealers will appreciate this attention on your part—and will remember you when ordering again.

Let us tell you more about the advantages of using Wyandotte Calcium Chloride to freezeproof coal. Just mail the coupon.

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Michigan Alkali Division  
Wyandotte, Michigan

Send me literature and further information about the uses and advantages of Wyandotte Calcium Chloride.

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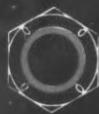
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**Wyandotte** **CALCIUM CHLORIDE**  
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WYANDOTTE CHEMICALS CORPORATION • Michigan Alkali Division • Wyandotte, Michigan



the RED ELASTIC COLLAR—denoting an ESNA product—is...



permanently clinched to prevent turning under application and subsequent operational stresses.



permanently secure against vibration effects. The bolt impresses does not cut full contact threads.



permanently tight against moisture. Bolt threads have 100% contact in collar, and full metal seat.



permanently elastic. The Red Collar retains its grip after repeated usage.

**What** happens when this Red Elastic Collar becomes part of a nut? The nut becomes an ESNA Elastic Stop Nut! And it provides permanent protection for any detachable or adjustable assembly.

**How?**

**First**, an Elastic Stop Nut locks in position anywhere on a bolt or stud. Every bolt can be precisely prestressed to carry its full load. Positioning devices can be adjusted with precision. Vibration cannot disturb these settings—because the Red Elastic Collar eliminates all play between bolt and nut threads with its full contact, permanent grip.

**Second**, it prevents thread corrosion. Moisture is sealed out. Adjustment or removal is easy—any time.

**Third**, it prevents thread damage. Full thread contact in the Red Elastic Collar keeps the metal threads firmly seated. Axial play caused by vibration or stress reversal is dampened.

**Fourth**, it prevents seepage of liquids past bolt threads. Permits nut to be used as a sealing device.

**Fifth**, it prevents maintenance waste. The Red Elastic Collar, which does not injure the bolt or its plating, permits repeated usage.

**Here's a challenge:** Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Or, if you want further information write for literature. Elastic Stop Nut Corporation of America, Union, New Jersey. Representatives and Agents in principal cities.



## ELASTIC STOP NUTS

INTERNAL WRENCHING   ANCHOR   INSTRUMENT MOUNTING   SPLINE CLINCH   GANG CHANNEL

**PRODUCTS OF: ELASTIC STOP NUT CORPORATION OF AMERICA**

### EQUIPMENT APPROVALS

Three approvals of permissible equipment were issued by the U. S. Bureau of Mines in December, as follows:

La-Del Conveyor & Mfg. Co.—Model SF elevating conveyor; 5-hp. motor; 230 volts, d.c.; Approval 544; Dec. 3.

Joy Mfg. Co.—Type 5SC-1PD shuttle car, storage-battery operated; three 5-hp. motors; 90 volts, d.c.; Approval 545; Dec. 3.

Myers-Whaley Co.—Size 4 Myers-Whaley shovel; 25-hp. motor; 230 volts, d.c.; Dec. 12.

town, Ohio, began at a meeting, Jan. 22, of the municipal smoke- and dust-control committee. The committee includes representatives of railroads, factories, coal dealers and building interests. O. L. Devore represents the wholesale, and Leo Dunning, the retail coal dealers, on the committee.

The Columbus (Ohio) City Council has approved a smoke-abatement program for 1946, appropriating \$1,666 to supplement a fund of \$15,380 in private donations raised by civic leaders for the program. The city will try to get a chief smoke inspector by March 1, according to assurance given city officials Jan. 22 by Ralph Sherman, chairman of the Smoke Abatement Commission. Mr. Sherman expressed dissatisfaction at the city's financial arrangement for hiring such an inspector, but agreed to do what he could to obtain a competent man. Mayor Rhodes assured Mr. Sherman that \$20,900, the amount Mr. Sherman said would be required for a year, would be included in the 1947 budget.

Probable amendment of Cincinnati's smoke ordinance was foreseen Jan. 14 in a report by Safety Director Oris E. Hamilton that he was assembling data on more stringent ordinances elsewhere. He said there had been an utter lack of cooperation on the part of all excepting railroads, whose violations were almost nil, and that he would have recommendations for legislative improvement to make to City Manager W. R. Kellogg and ultimately to the City Council.

The Illinois Coal Commission tentatively offered \$60,000 Jan. 4 for further experimentation by two Illinois concerns in the development of a "smokeless" Illinois coal. The Kern Coal Conversion Co., East St. Louis, was allotted \$20,000 to continue its experimentation in which the coal is pulverized, treated chemically and pressed into briquets. The Institute of Gas Technology of Chicago was tentatively offered \$40,000 to continue work in its own method of producing a "smokeless" coal.

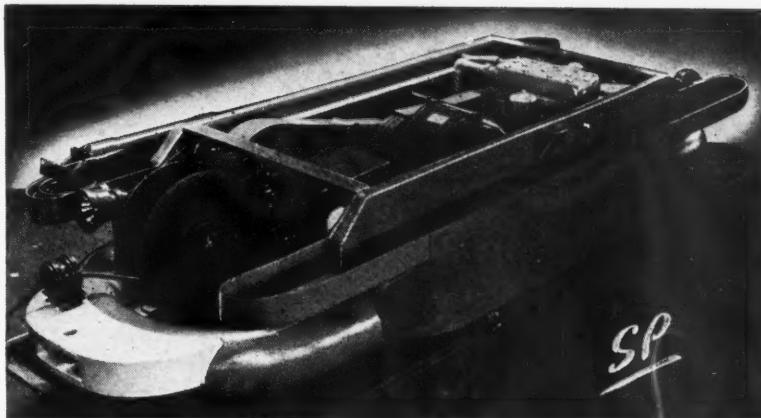
State Senator Rice Miller, Hillsboro, chairman of the commission, had stated earlier that the \$75,000 authorized by the State for use by the commission would not be enough to finance both methods. The commission also decided to take action to install several "smokeless" stoves in the East St. Louis area. The stoves, designed by

# CANTRELL . . . a good name to keep in mind for Air Compressor Economy

Here are four Cantrell Compressors, all especially built to meet coal mining requirements, and each one for a particular type of service.

Installation of any Cantrell Compressor will be the beginning of low cost compressor service for you. First, because of their reasonably low first cost and second, because of the unique Cantrell factory rebuilt compressor exchange plan.

The original purchase price of a "Cantrell" is so reasonable that many mines install several machines in order to take full advantage of the savings in time and labor in compressor service. When compressor unit becomes worn to the point of requiring overhauling, this expensive mechanical work in your shop is eliminated. We send you a completely rebuilt-at-factory unit at small cost and in an hour you can replace the old unit and return for credit. This is the Cantrell Compressor exchange plan and



one that has meant large savings to hundreds of enthusiastic users of these fine machines.

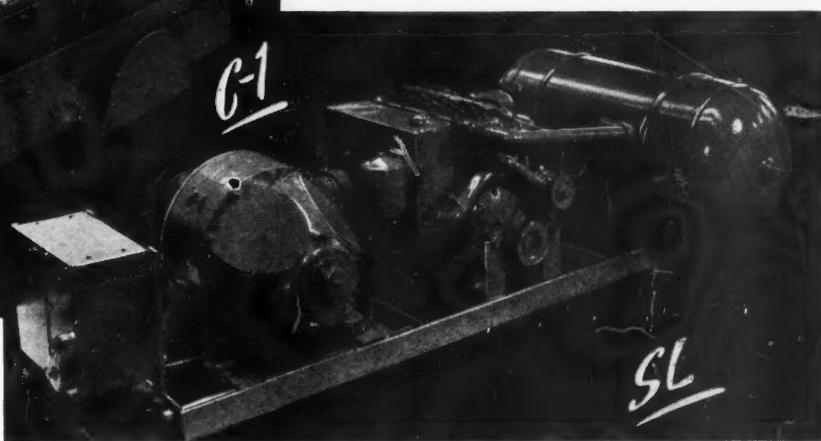
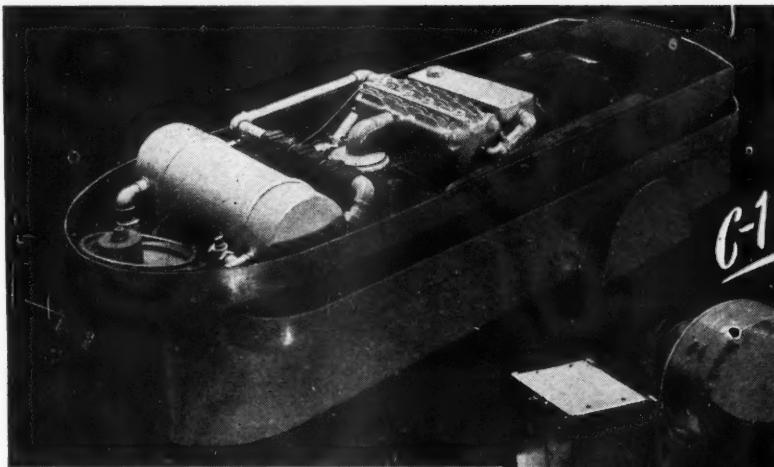
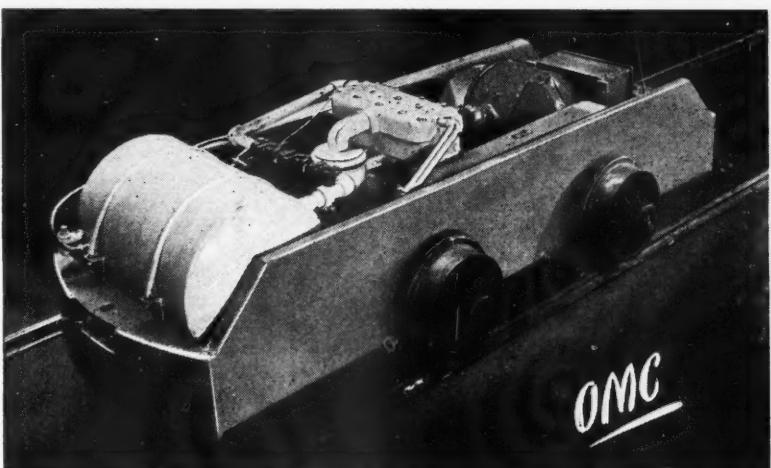
THE CANTRELL, TYPE SP, shown above with top removed, is a completely independent machine. It's on its own at all times—waits on nothing. In addition to its self-tramming feature, with a single motor for both tramping and compressor use, it serves as a two-ton locomotive for special hauling of crews and equipment, transfer of cars, cutting machines, and many other duties.

THE CANTRELL TYPE O. M. C., is a machine for use in mines where it is preferred to move the compressor in regular trips of cars or with an extra locomotive.

THE CANTRELL, TYPE C-1, is built with rubber-tired wheels for trackless mine use or for shop use where a portable compressor is preferred to stationary equipment.

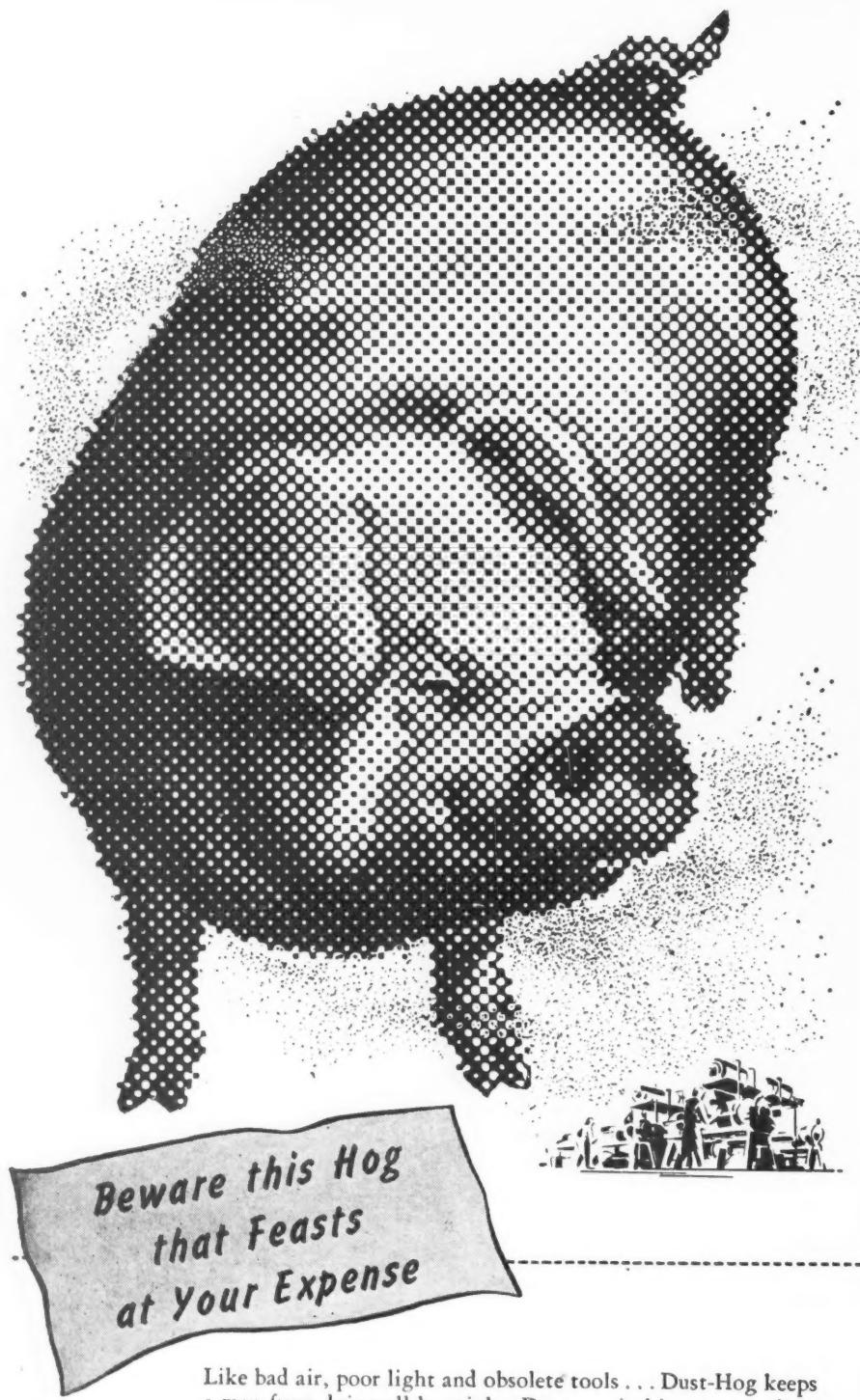
THE CANTRELL, TYPE SL, is our stationary type for shop use or for mounting in a mine car for transfer from place to place for service.

Remember CANTRELL . . . a good name to keep in mind for Air Compressor Economy. Write or wire now for complete details.



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**COMPRESSORS**

IMPERIAL-CANTRELL MFG. CO., JELlico, TENN.



Like bad air, poor light and obsolete tools . . . Dust-Hog keeps a man from doing all he might. Dust . . . in his eyes . . . dimming his light . . . begrimed his work . . . slows him down, invites mistakes, spoils morale.

Consider the money dust control saves — improving efficiency, reducing maintenance, reclaiming dust by-products. Pangborn's free booklet, "Control of Industrial Dust", brings you up to date on how to clear out costly "dust pockets".

Write Pangborn — world's largest manufacturer of dust control and blast cleaning equipment.

# Pangborn

PANGBORN CORPORATION, HAGERSTOWN, MARYLAND

Prof. J. R. Fellows, of the University of Illinois, have been developed for use in homes and small apartments only.

The Kern method has the backing of both the U.M.W. and Progressive miners' unions.

In furtherance of the efforts of Mayor Aloys P. Kaufmann of St. Louis to induce nearby southern Illinois cities and communities in St. Louis County, Missouri, to impose on their inhabitants much the same restrictions on the use of southern Illinois coal that prevail in the Mound City, an area-wide meeting was held Jan. 18 in St. Louis. Many organizations and individuals in the communities under attack pledged cooperation to Mayor Kaufmann, who pointed out that East Side smoke is blown across the Mississippi River into St. Louis.

The newly formed Area Smoke Committee sent invitations Jan. 26 to municipal governments and civic and business groups in the St. Louis metropolitan district to send representatives to a meeting of the committee Feb. 5 at the First National Bank in East St. Louis, Ill. Arnold C. Johnson, president of the bank, is head of the committee and W. Philip Shatts, executive secretary, Metropolitan Plan Association, is secretary. At the meeting an executive committee of seven is to be named and a plan of procedure to be followed probably will be mapped to effect elimination of excess smoke on the east side of the river.

Chairman Johnson has recommended an educational campaign to bring about the desired results on the east side of the river and he has asked the indulgence and assistance of St. Louis in the effort to clear up the situation in East St. Louis and vicinity. Mayor John T. Connors of East St. Louis and that community's City Council have pledged their cooperation.

On the other hand, Charles F. Spilker, secretary of the East St. Louis Chamber of Commerce, has declared that his organization is not in favor of any smoke-abatement practices that will jeopardize East Side economics. He has expressed the belief that the St. Louis smoke-control ordinance has hurt the business of Illinois coal mines. Recently St. Louis issued statistics to show that it is using more Illinois coal today than before the ordinance was passed and that St. Louis uses a greater percentage of coal in relation to its total fuel consumption than does Chicago.

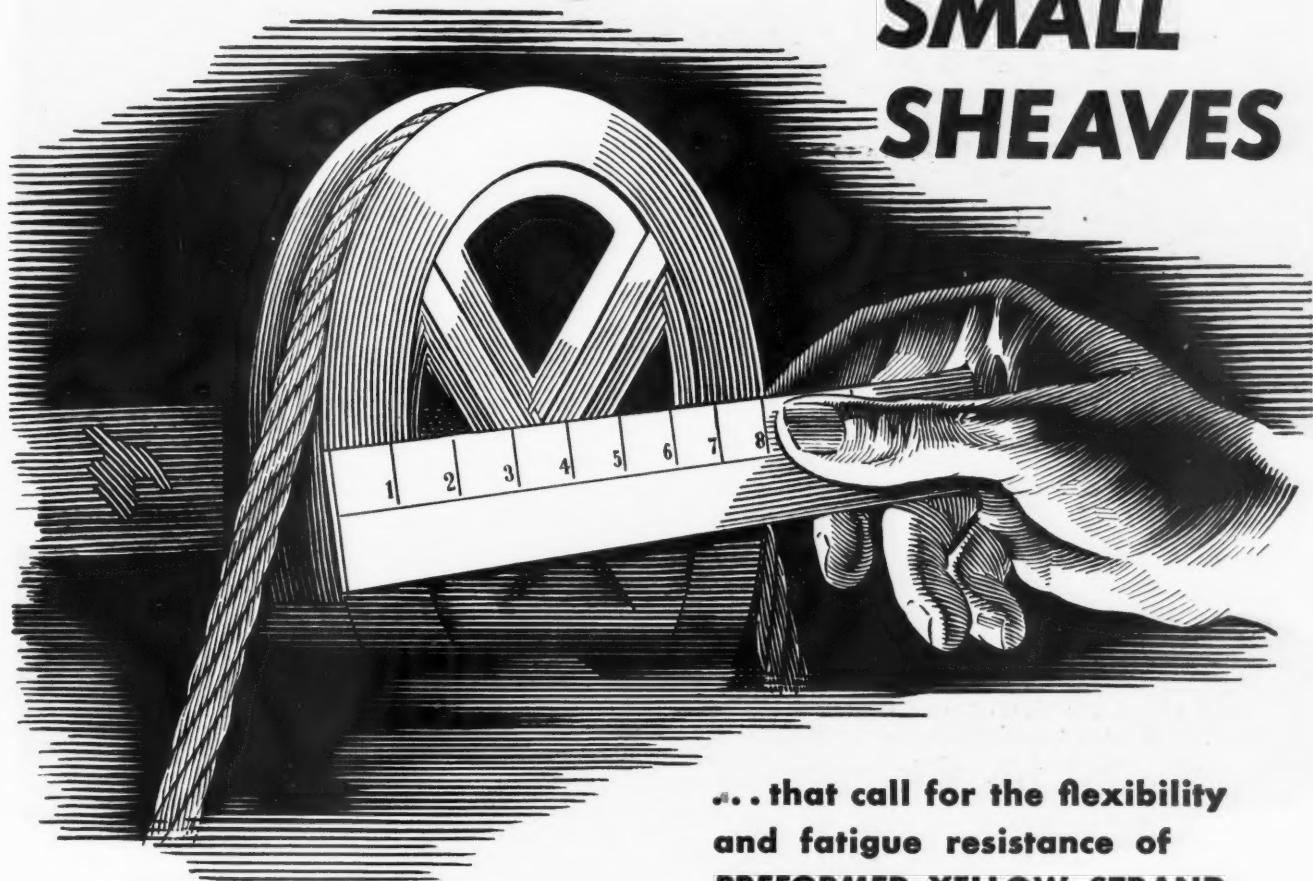
Pittsburgh's (Pa.) anti-smoke ordinance, now on the statute books of the city, cannot go into effect on March 1, the United Smoke Council informed residents Jan. 16. Haydn Stuessy, acting chairman of the council, said no date would be set at present for enforcing the ordinance. The law is supposed to go into effect six months after the end of the war. Prof. Sumner B. Ely, superintendent of the Bureau of Smoke Prevention, explained, however, that many people were under the impression that V-J Day, Sept. 2, marked the official close of World War II, whereas actually hostilities still are officially in effect.

## Personal Notes

T. E. McCARTHY has been appointed vice president and general manager of the Clearfield Bituminous Coal Corp., Indiana,

We still have with us...

## SMALL SHEAVES



...that call for the flexibility  
and fatigue resistance of  
**PREFORMED YELLOW STRAND**

In a lot of equipment lines, old and new models will have one feature alike: small sheaves—perhaps accompanied by small drums. Either is tough on wire rope. Both should remind you to minimize their fatiguing effect by using *Preformed Yellow Strand*.

While reasonable bending is expected of unpreformed rope, severe bending tends to break down the steel itself. High speeds, heavy loads and reverse bends all hasten a premature end.

The flexibility of *Preformed Yellow Strand* enables it to hold its own *longer* against fatigue. Its wires and strands can concentrate on the

external bending job, because internal stresses have been virtually neutralized during manufacture. Instead of having been forcibly twisted into place, the parts have been preshaped to the spiral curvature they keep in the finished rope.

Along with greater endurance, smooth-running *Preformed Yellow Strand* offers faster installation...higher

kink-resistance...increased protection for workmen.

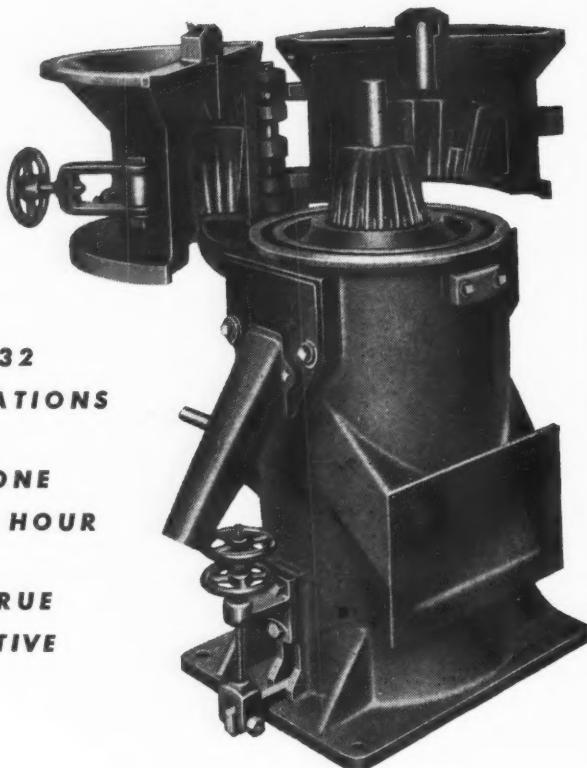
Specify *Preformed Yellow Strand* by name. Get all you should in wire rope performance and economy. Broderick & Bascom Rope Co., St. Louis 15, Mo. Branches: New York, Chicago, Houston, Portland, Seattle. Factories: St. Louis, Seattle, Peoria.

**HAND BOOK FREE:** "Wire Rope for Mining" contains useful facts, tables, pictures. Write for your copy.

**BRODERICK & BASCOM**  
***Yellow Strand***  
**PREFORMED WIRE ROPE**

**YOU GET ACCURATE COAL  
SAMPLES FAST  
WITH  
STURTEVANT  
Automatic Crusher and Sampler**

- ★ **ELIMINATES 32  
HAND OPERATIONS**
- ★ **PROCESSES ONE  
TON IN ONE HOUR**
- ★ **PROVIDES TRUE  
REPRESENTATIVE  
SAMPLES**



The Sturtevant automatic coal sampler enables you to make accurate coal samples quickly and easily. All you do is feed the coal or coke into the hopper . . . the sampler does the rest, discharging a homogeneously representative mixture through the sample spout ready for analysis.

The Sturtevant method eliminates 32 of 34 hand operations, thus speeds sampling work and cutting costs by providing accurate samples in a few minutes. Get the Sturtevant story. Write for information and bulletin today.

**STURTEVANT  
MILL COMPANY**

**31 Harrison Square, Boston 22, Massachusetts**

*Designers and Manufacturers of*

**CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS  
MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS**

Pa., in addition to his duties as general manager of the Coal Mining Department of the New York Central R.R.

**G. R. SPINDLER** has been reappointed by Governor Clarence W. Meadows as chief of the State Department of Mines of West Virginia for a term extending to Dec. 31, 1949. The chief had been a member of the State university staff since 1934, being appointed acting director of the School of Mines in 1941 and named director last year.

**CLYDE A. PIPPEN**, Birmingham, Ala., has been elected secretary-treasurer of the Alabama Mining Institute, vice H. E. Mills, deceased. Graduated in law from University of Virginia Law School, Mr. Pippen was released recently from the Navy, where he served as a Senior Lieutenant.

**A. W. ("ART") VOSSLER** has been elected president and general sales manager of the Pittsburg & Shawmut Coal Co., Kittanning, Pa. For several years he was division freight agent for the Pittsburg, Shawmut & Northern R.R. at Olean. Beginning in 1914 he was engaged in the sale and distribution of bituminous coal in the eastern, northern and Canadian markets, becoming in 1933 general sales manager of the Shawmut Coal & Coke Co., Buffalo, N. Y. In his new position he will maintain offices in Kittanning and Buffalo.

**ROBERT LEE LLEWELLYN**, for the last seven years a member of the engineering department of the Island Creek Coal Co., Holden, W. Va., has resigned to accept the position of preparation engineer with the Valley Camp Coal Co., Elm Grove, W. Va. A mechanical engineering graduate of Penn State, he is a son of Lee Llewellyn, of the McNally-Pittsburg Mfg. Corp.

**JAY LITTLEPAGE**, former director of the Ohio Reclamation Association, an organization of operators to reclaim strip-mine lands, has returned to his position after serving three years in the Navy. He had served as director of the group since its inception. **CHARLES MACINTIRE**, who has been in charge of the association's activities during Mr. Littlepage's absence, will continue with the group as assistant director.

**H. C. LIVINGSTON** has been elected vice president, operation, of the Union Pacific Coal Co. and vice president of the Washington Union Coal Co., Southern Wyoming Utilities Co. and Union Pacific Water Co., with office in Rock Springs, Wyo.

**V. O. MURRAY**, assistant general manager, Union Pacific Coal Co., has been advanced to general manager, with office at Rock Springs, Wyo.

**DODGE FREEMAN** has been made assistant division superintendent of the Peabody Coal Co. at Taylorville, Ill.

**EDGAR MONKS**, formerly resident engineer, Consumers Mining Co., Harmarville, Pa., has been appointed general superintendent of all the coal plants of the Wheeling Steel Corp.

**EDWARD H. GREENWALD** has been promoted from a position in the engineering department to mining engineer for the Boone County Coal Corp., Sharples, W. Va.

# Gear Puzzle with a Payoff for your Plant!



Call in  
**SOCONY-VACUUM**  
for this Correct  
Lubrication Program

- Lubrication Study of Your Entire Plant
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- Lubrication Schedules and Controls
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**N**O, this isn't an engineer's nightmare! It's our conception of the different types of gears in your plant, linked in a continuous train. Production costs . . . and profits . . . depend on efficient operation of gears like these. Each gear has its own lubrication needs.

Some are ordinary open gears. Socony-Vacuum makes a special "Black Magic" fluid to prolong their life. There's a worm gear. Socony-Vacuum has special oils that stay on despite the wiping, sliding action.

There are herringbone gears, hypoids, bevels and spiral-bevels. Socony-Vacuum engineers have the products . . . and the knowledge . . . to assure scientific lubrication for every type under every condition.

The same applies to all bearings and cylinders. Socony-Vacuum's great new wartime developments, backed by 80 years' lubrication experience, are available in a Complete Lubrication Program for your plant. Insure maximum machine efficiency now with this program.

## Socony-Vacuum Oil Co., Inc.

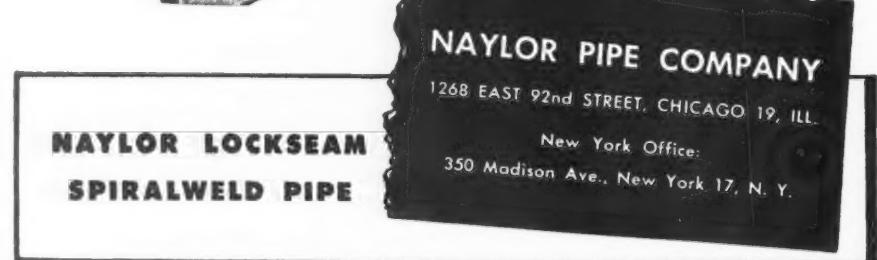
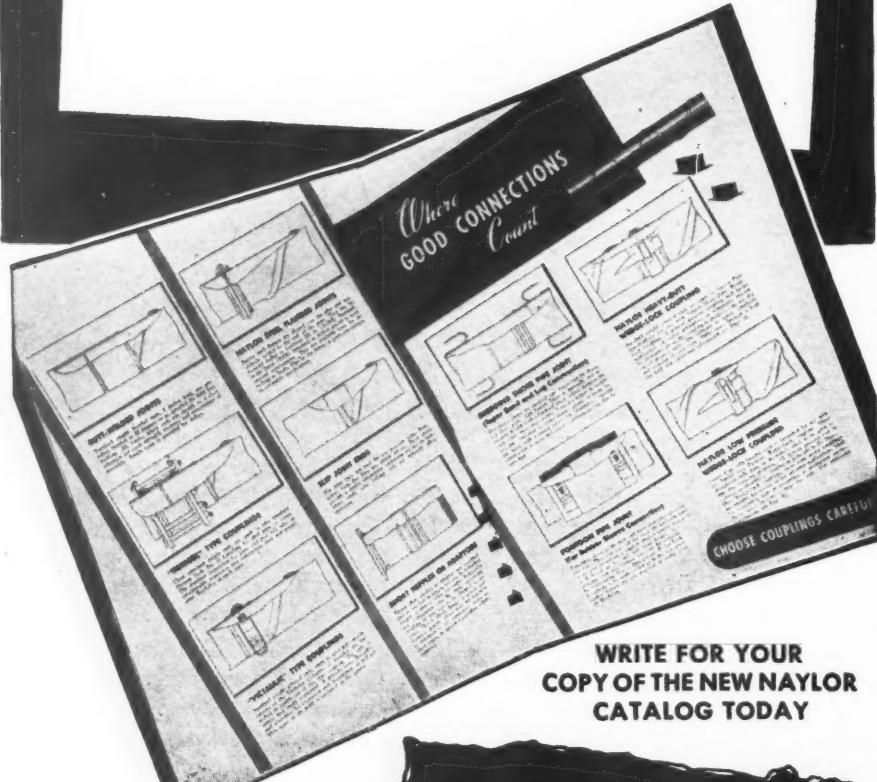
and Affiliates: Magnolia Petroleum Company, General Petroleum Corp. of Calif.

Tune in "Information Please"—Monday Evenings, 9:30 E.S.T.—NBC

U

# MEMO

*Find out today  
about Naylor's  
advanced pipe coupling  
methods that save  
time, work and money*



A graduate in mining engineering, University of Pittsburgh, he has been with the Boone County Coal Corp. for four years.

J. B. HUGHES has been advanced to the newly created position of general superintendent of the Union Pacific Coal Co., with office in Rock Springs, Wyo.

W. B. BEERBOWER, Dearth, Pa., has been appointed superintendent of the Maxwell mine of the H. C. Frick Coke Co., LaBelle, Fayette County, Pa.

ROBERT L. HACKNEY, Palmer, Pa., has been promoted to superintendent of the Dearth mine of the H. C. Frick Coke Co., Uniontown, Pa.

F. L. MCINTIRE has been appointed superintendent of the coke division of Jones & Laughlin's Pittsburgh district. He started with J. & L. as chief chemist at the coke plant. For the last 18 years he has been superintendent of the Pittsburgh coke plant.

F. L. MCINTIRE has been appointed superintendent; E. J. HEASTAN as assistant superintendent, and F. C. LAUER as general plant foreman at the Jones & Laughlin Pittsburgh (Pa.) coke plant.

J. J. CAVETT has been appointed superintendent; W. C. HALL as assistant superintendent, and E. M. GILLESPIE as general plant foreman at the Jones & Laughlin Aliquippa (Pa.) coke plant.

MICHAEL SCOLLARD, secretary of the Indiana Coal Producers' Association since its organization in 1918, has retired. Mr. Scollard's successor with this group of strip-mine operators is ERNEST B. AGEE, formerly his assistant.

R. R. ESTILL has been appointed combustion engineer for the H. C. Frick Coke Co., the United States Coal & Coke Co., and their associated companies, vice W. E. Housman, retired.

SAM WOODHEAD, secretary-treasurer, Independent Coal & Coke Co., operating in Carbon County, Utah, who has been affiliated with the firm for 26 years, 16 in the Salt Lake City office, has been appointed operating head at Salt Lake City with the title of general manager. He will retain his post as secretary-treasurer.

GRAHAM GRANGER has been elected as assistant vice president and JOHN MITCHELL has been named as director of a newly organized research department of Eastern Gas & Fuel Associates. Mr. Granger, an engineer by profession, has been associated with Eastern's Koppers Coal Division since 1936 as an engineer and later as assistant general sales manager with offices in New York. Mr. Mitchell, a chemical engineer, has been associated with subsidiary companies and other organizations affiliated with Eastern Gas & Fuel Associates since 1928. Both will be located at the main offices, 250 Stuart St., Boston.

I. N. BAYLESS, who was elected president and general manager of the Union Pacific Coal Co. Nov. 1, 1944, vice Eugene McAuliffe, also has been named to succeed the latter as president of the Washington Union Coal Co., Southern Wyoming Utili-

# EXTRA ENDURANCE

## For the Hard Pull!

When the next-to-impossible Wire Rope job comes up... one that requires the utmost in strength and ENDURANCE, just call in "HERCULES" (Red Strand)... for here is a Wire Rope that through the years has proved its 'extra' endurance every time it has been put to work.



PIONEERING in heavy duty performance on tough wire rope jobs, "HERCULES" (Red Strand) has been adopted in one industry after another. That's why we say... for that *extra* endurance, flexibility, strength, elasticity and adaptability, *always specify "HERCULES"* (Red Strand), and you'll come in first with the job well done.

Made in Round Strand and Flattened Strand constructions... Preformed or Non-preformed—there's a type and construction to meet *any* heavy duty demand.

Consult our Engineering Department on *your* Wire Rope requirements—they'll be glad to work with you.

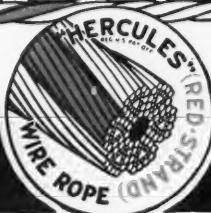
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# A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS  
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## ...for the Mining Field

LOW first cost, fast priming, efficient, non-clogging action mean that Carver Pumps get to work faster, stay on the job longer, and pump more water at less cost per gallon. Top capacity is maintained even after hundreds of hours of toughest service because the wearing surface seal rings are made of Tungsten Carbide that will keep water in and air out.

Every Carver Pump carries a "Certified" tag which means that it has been carefully tested and fully meets our high standards for performance on the job. It's your assurance of peak performance on your toughest jobs as well as on the easy ones. For details, see your nearby Carver distributor or write direct.

**THE CARVER PUMP CO. .**  
**Muscatine, Iowa**

**CARVER CENTRIFUGAL**  
**Certified PUMPS**

ties Co. and Union Pacific Water Co. He has transferred his office to the Union Pacific Building, Omaha.

ERNEST L. BAILEY, Charleston, W. Va., resigned Feb. 1 as State Road Commissioner to devote his time to private business, including a partnership with N. P. Rhinehart in coal stripping. In the early twenties Mr. Bailey was general superintendent of the Kentucky mines of Semet-Solvay. Later connections with the coal industry consisted of a consulting engineering practice and chief of the West Virginia Department of Mines. His partner, Mr. Rhinehart, also is a former chief of the Department of Mines.

FRANK H. BROOKS, superintendent of Mine No. 25 of the Consolidation Coal Co., Clarksburg, W. Va., has been transferred to the same position at Arkwright mine, Morgantown, W. Va. A veteran superintendent for Consolidation, Mr. Brooks will be succeeded at Mine No. 23 by GEORGE W. McCAA, a graduate mining engineer of Lafayette College, Easton, Pa. LEON WILSON has been promoted from section foreman to mine foreman at No. 25.

L. C. CAMPBELL, vice president, Koppers Coal Division, and a director of the National Coal Association, has been elected to fill a vacancy on the N.C.A. executive committee.

DR. C. J. POTTER, formerly Deputy Solid Fuels Administrator, has been tendered a vote of thanks and appreciation "for his splendid work during a trying period in the history of the industry as well as the country" by unanimous action of the directors of the National Coal Association.

G. M. HUMPHREY, president, M. A. Hanna Co., Cleveland, has been appointed chairman for 1946 of the Business Advisory Council of the Department of Commerce, vice THOMAS B. McCABE. Becoming associated with the Hanna company in 1918 as general attorney, Mr. Humphrey has been its president since 1929.

## Obituary

ARTHUR BLISS SHEETS, 71, former president of the Hillman Coal & Coke Co., Pittsburgh, Pa., died Jan. 23 at his home in that city after a long illness. He had been one of the organizers of that firm, the Hecla Coal & Coke Co., Hillman Transportation Co. and other affiliated companies of the Hillman group.

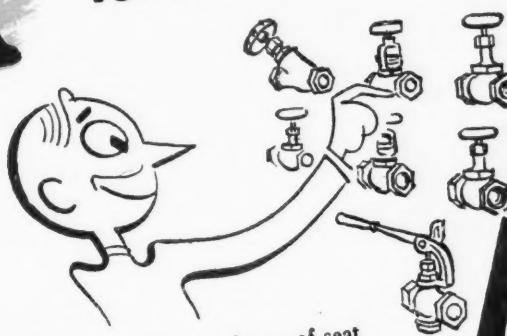
DR. STANLEY A. TRENGROVE, 47, editor of Mining Congress Journal, died Dec. 28 in Washington, D. C., after a brief illness. Editor since March 1, 1944, he had previously been chairman of the department of mining engineering, Missouri School of Mines, Rolla, Mo., for three years. Prior to that he had served as production engineer and later assistant district superintendent for the Oliver Iron Mining Co. on the Mesabi Range of Minnesota.

JOHN ARRONCO SR., 69, head of the Arronco Coal Co., near Kenilworth, Utah, was found dead Jan. 3 in a crevice at the Arronco mine, apparently the victim of a

# THE A-B-C'S OF TROUBLE-FREE VALVE PERFORMANCE

## A

Use the right type of valve  
for the service...

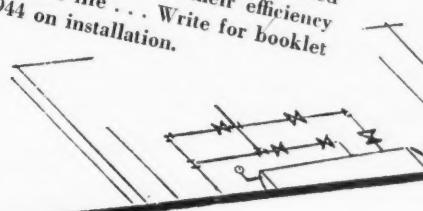


Select the metal, pattern, and type of seat  
best suited to the particular service . . .  
Get advice from us or your Jenkins Dis-  
tributor.

## B

Place valves correctly  
in the line...

Where and how valves are installed  
makes a difference in their efficiency  
and service life . . . Write for booklet  
No. 944 on installation.



## C

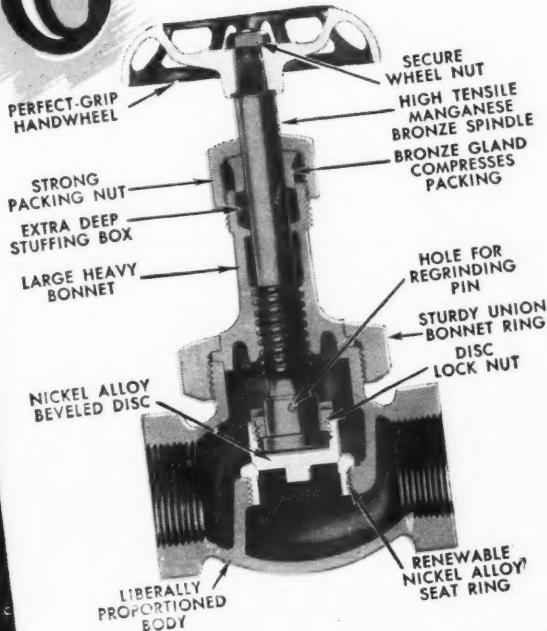
Choose Jenkins Valves  
for lifetime economy!

EXAMPLE: Fig. 950 GLOBE

THESE BRONZE GLOBE valves are especially recommended for the control of up to 200 lbs. steam at 550° F.; up to 400 lbs. non-shock cold oil, water, gas, where service conditions are severe, tightness is essential and operation is frequent. Easy to dismantle and reassemble, easy to regrind without removal from the line. Insertion of handy regrinding pin enables spindle to serve as grinding tool. Face of seat ring parallels and equals that of disc, assuring constant contact area, tight closure, prevention of shoulder or grooves in regrinding. Disc and seat ring renewable.

As in all Jenkins Valves, better design, better materials, better workmanship, insure lifetime economy in long, trouble-free service and minimum maintenance costs.

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Jenkins Bros., 80 White Street, New York 13; Bridge-  
port; Atlanta; Boston; Philadelphia; Chicago; San  
Francisco. Jenkins Bros., Ltd., Montreal; London.



# JENKINS VALVES

LOOK FOR THIS DIAMOND MARK  
SINCE 1864



For every service . . . in Bronze, Iron, Cast Steel,  
Corrosion-Resisting Alloys . . . 125 to 600 lbs. pressure.

Jenkins Bros.





Floor Mounted Brake

*Stearns*  
**MAGNETIC**

## **BRAKES** **Stop** **HEAVY** Loads

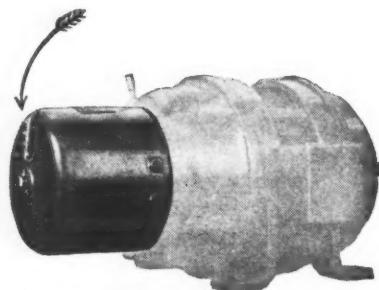
Up to 100 HP motor driven loads, depending on speed, can be effectively retarded with Stearns Magnetic Disc Brakes.

If you have a problem involving one or a sequence of automatically controlled stops on motors or moving machinery, it will pay you to investigate Stearns

Brakes. The cost is so little, and the usefulness so great in dollars and cents value.

Bring your braking problems to our Brake Division. Stearns Brakes are being used efficiently and satisfactorily in hundreds of exacting operations.

Put them to work for you!



The magnetic brake with the lining wear indicator and manual release—distinctive, original.

*Stearns*  
**MAGNETIC MFG. CO.**  
661 S. 28th St., Milwaukee 4, Wis.

SEPARATORS • ROLLS • DRUMS  
CLUTCHES • PULLEYS •  
SPECIAL MAGNETS

heart attack. Born in Italy, he went to Utah in 1905, being one of the founders of the Mutual Coal Co. in 1919 and subsequently opening the Arronco mine.

WILLIAM C. ALLEN, 64, outside foreman for the last 28 years at Henry colliery, Lehigh Valley Coal Co., died Jan. 15 at his home in Plains, Pa. Formerly he was foreman at the William A. colliery.

### Unusual Explosion Takes Toll of 15

Thirteen men were killed and two others died subsequently in a hospital, while more than 200 escaped Jan. 15 in one of the most unusual catastrophes recorded in a century of coal mining in West Virginia. Twenty-two men working inside the Berwind No. 9 mine of the New River Pocahontas Consolidated Coal Co., near Welch, were injured in an explosion that wrecked buildings in the immediate area. Company officials reported that 267 men were at work when the explosion occurred.

Although the source of ignition was still undetermined, a preliminary report on the disaster said Jan. 16 the explosion "was propagated entirely by coal dust." The fact that the violence dissipated "as it approached the working section" saved the lives of 252 other men in the mine, State Mines Chief G. R. Spindler said.

### Electrical Group Has Exhibition

The Mining Electrical Group of Southern Illinois inaugurated its 1946 season with one of the first post-war exhibitions held in the mining industry, the evening meeting of Jan. 3 being devoted entirely to a showing of war-born electrical equipment by 47 manufacturers and suppliers. About 180 members and guests inspected the equipment. It was the unanimous opinion of the members that this should become a yearly event.

This group is starting an electronics course. Each monthly meeting will be opened with two short films on electronics, followed by the usual program for the evening. The final meeting of the 1945 season will include a wind-up of the course and a complete review of all the films by a capable instructor.

Officers elected for the 1946 season are: R. E. Sontag, Okonite Co., president; Fred Giese, Sahara Coal Co., vice president; E. W. Stewart, Freeman Coal Mining Co., secretary; and Leroy Metcalf Jr., Old Ben Coal Corp., treasurer. Now in its ninth year, the group has a membership of 230.

### Preparation Facilities

CINDERELLA COAL CORP., Cinderella, W. Va.—Contract closed with Jeffrey Mfg. Co. for two-compartment diaphragm jig; raw feed capacity, 180 t.p.h. 0x3-in.

W. G. DUNCAN COAL Co. (Luzerne-Graham Mining Corp.), Skibo Mine, Luzerne, Ky.—Contract closed with Roberts



Boring lower track wheels to .002 tolerance using Carbide tools in the Oliver "Cletrac" plant.



## We hold an "edge"!

The use of Carbide cutting tools in boring our lower track wheels . . . tools that will hold their cutting edge at higher operating speeds . . . is one reason why Oliver "Cletrac" tractors hold a big "edge" in quality.

Typical of the modern production methods in the Oliver "Cletrac" plant, this cost-cutting boring operation permits us to build in added quality, in materials and workmanship, without added cost to you. Highly skilled Oliver

"Cletrac" craftsmen plus the most modern equipment combine to maintain the standard of *extra* quality that is characteristic of every Oliver "Cletrac" tractor.

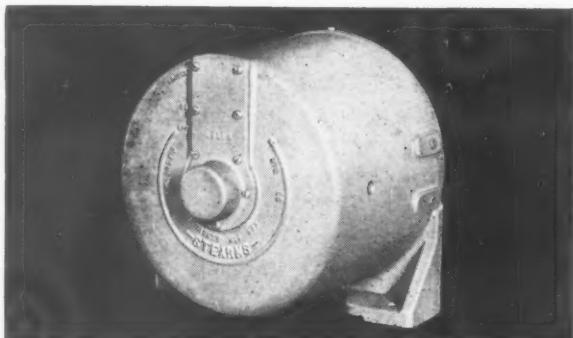
Maintenance of that standard enables your Oliver "Cletrac" dealer to offer you the finest in crawler tractors . . . for your every need.

# CLETRAC

a product of



The OLIVER Corporation



Floor Mounted Brake

This brake will develop a torque of 575 lbs. ft. or the equivalent of 100 HP at approximately 1000 RPM.

*Stearns*  
**MAGNETIC**

## **BRAKES** **Stop** **HEAVY Loads**

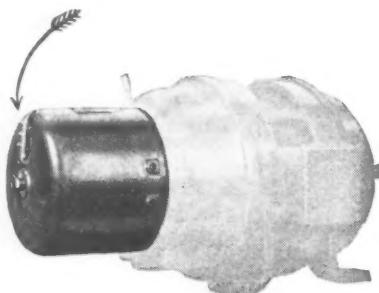
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If you have a problem involving one or a sequence of automatically controlled stops on motors or moving machinery, it will pay you to investigate Stearns

Brakes. The cost is so little, and the usefulness so great in dollars and cents value.

Bring your braking problems to our Brake Division. Stearns Brakes are being used efficiently and satisfactorily in hundreds of exacting operations.

Put them to work for you!



The magnetic brake with the lining wear indicator and manual release—distinctive, original.

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**MAGNETIC MFG. CO.**

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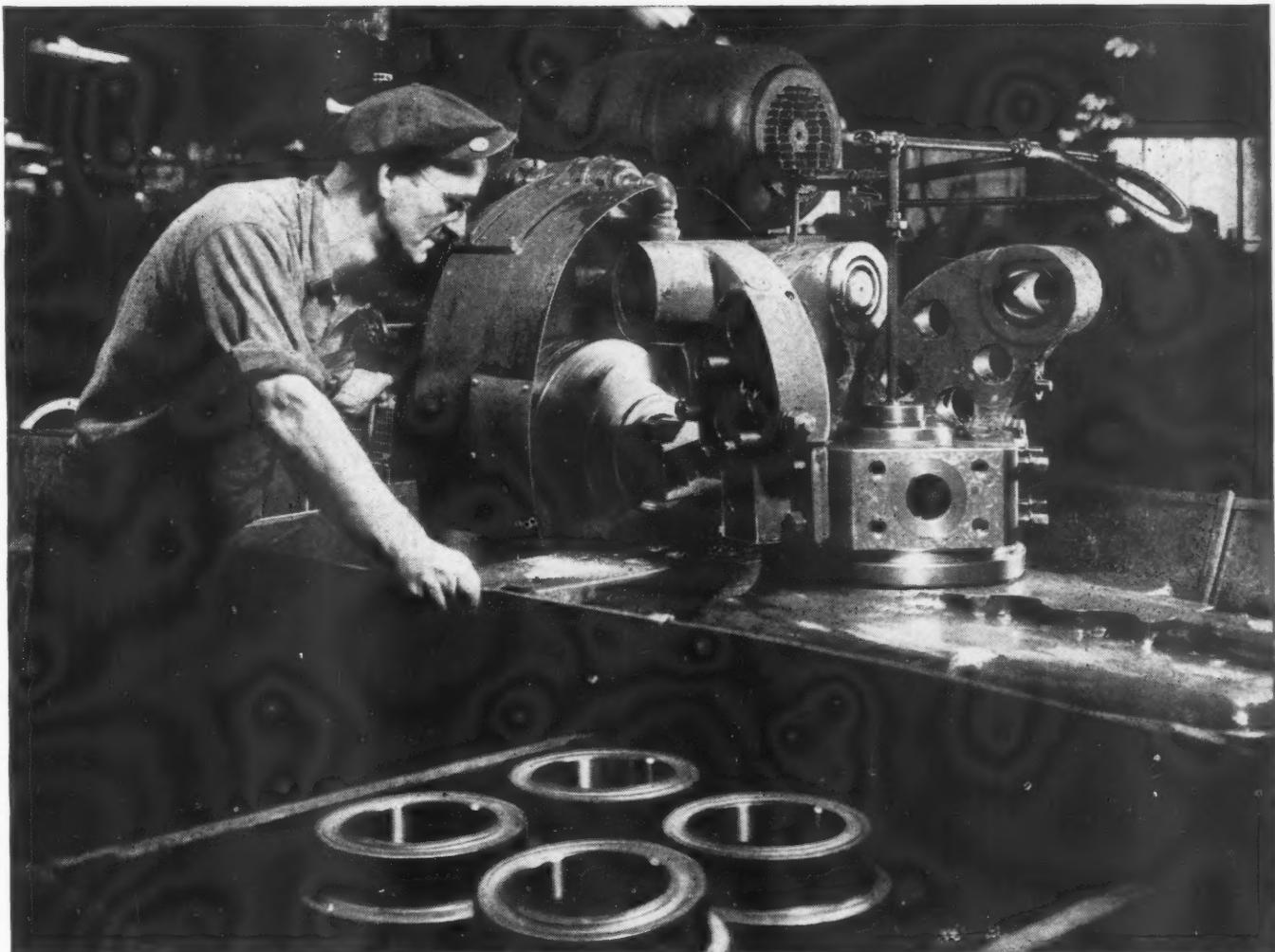
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Boring lower track wheels to .002 tolerance using Carbide tools in the Oliver "Cletrac" plant.

## We hold an "edge"!



The use of Carbide cutting tools in boring our lower track wheels . . . tools that will hold their cutting edge at higher operating speeds . . . is one reason why Oliver "Cletrac" tractors hold a big "edge" in quality.

Typical of the modern production methods in the Oliver "Cletrac" plant, this cost-cutting boring operation permits us to build in added quality, in materials and workmanship, without added cost to you. Highly skilled Oliver

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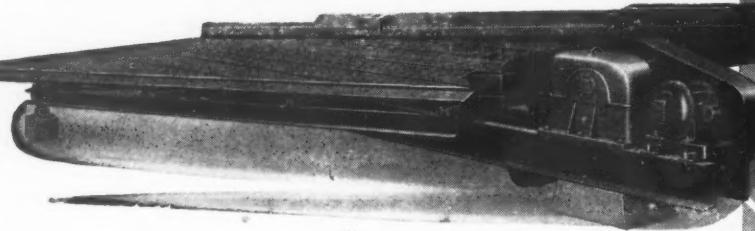


The OLIVER Corporation

**SAVE ON LABOR, POWER, UPKEEP  
and INSTALLATION COSTS**

with

## *SuperDuty* Diagonal Deck Tables



The advantages of high recoveries and top efficiency of SuperDuty Coal Washing Tables are so well recognized that oftentimes their economy is overlooked.

For instance, with SuperDuty Tables, no particular skill is needed by the operating attendance. No time or effort need be sacrificed to correct deck warp and flutter . . . there is none with the SuperDuty type of underconstruction. The stroke is easily adjustable while the table is in operation, and side tilt is altered with one simple control. The head motion is self-oiling and requires little attention. Consequently, one operator with little training can supervise a large battery of SuperDuty Tables.

Additional economies result from the construction of SuperDuty Tables. Since Concenco furnishes the complete pre-aligned underconstruction as an integral part of the table, you avoid complicated and costly foundations, expensive mill work, blocking and bracing. Rugged construction and effortless operation of SuperDuty Tables makes upkeep negligible. Also, the power requirement is quite low—substantially 1 H.P. under continuous full load operation.

There are many other advantages in using SuperDuty Tables—it is worth your time to send for Bulletin 119 and full details—today.

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PRODUCTS**

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& Schaefer Co. for Hydro-Separator coal washer equipment, capacity 250 t.p.h., to handle 6x1-in. coal; facilities to be provided to crush and load all of the industrial and domestic stoker sizes.

POWHATAN MINING Co., Powhatan Point, Ohio—Contract closed with Jeffrey Mfg. Co. for tipple equipment to handle mine-run; capacity, 400 t.p.h. raw feed.

ALLEN & GARCIA Co., Chicago (for Chicago, Wilmington & Franklin Coal Co.)—Contract closed with Jeffrey Mfg. Co. for two-compartment 7-ft. 5-cell Baum jig to treat 0x7-in. coal; capacity, 600 t.p.h. raw feed.

LECKIE COLLIERIES Co., Aflex, Ky.—Contract closed with Jeffrey Mfg. Co. for tipple equipment to handle mine-run; capacity, 175 t.p.h. raw feed.

RED PARROT COAL Co., Mine No. 5, Prenter, W. Va.—Contract closed with Roberts & Schaefer Co. for Stump Air-Flow cleaning equipment to treat 80 t.p.h. of 0x8-in. slack; to be completed Aug. 1.

## Coal Group to Handle Europe's Supply

Establishment of the European Coal Organization, which since last May has played a major role in straightening out Europe's coal supply and distribution problems, has been agreed on on a permanent basis by the governments of the United States, Great Britain, France, Belgium, the Netherlands, Luxembourg, Norway, Denmark, Greece and Turkey, according to a dispatch from London Jan. 6 to the New York Times.

Headquarters of the organization in London also said, in announcing the signature of an agreement to this end, that the Government of Czechoslovakia had signified its intention of joining and that Poland, the Soviet Union and Yugoslavia had been invited. J. C. Gridley, who has been chairman of E.C.O. during its difficult organization stages, is returning to private business. He will be succeeded by J. Eaton Griffith, of the British Ministry of Fuel and Power, while B. P. Aircard, of France, will continue as secretary general.

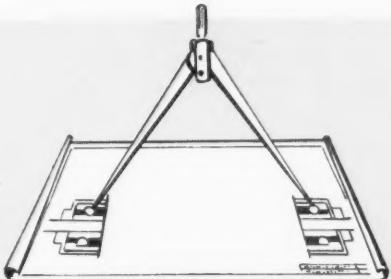
The absence of the Soviet Union and Poland from the organization is considered in London to be the major obstacle to a real combined attack on the problems involved in restoring the flow of coal to Europe's industries and homes.

There has been a noticeable improvement in France's desperate coal situation during the last two weeks, French embassy officials in London said Jan. 5. Deliveries of 50 kilograms of coal per household were to be made in January in Paris and other large cities. Improvements in shipments from the Ruhr as a result of special efforts by the British authorities were cited as the main reason for the easier supply situation in France.

Reconversion Director John W. Snyder said in Washington Jan. 15 that the United States had shipped 1,182,000 tons of coal to Europe in December last and announced an allocation of 1,500,000 tons for European shipment in January. He added, however, that action taken in December to expedite exports may result in making up the deficit before the end of the coal year on March 31.

# GOOD MAGNETOS

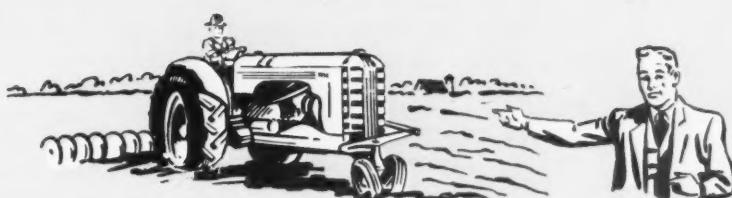
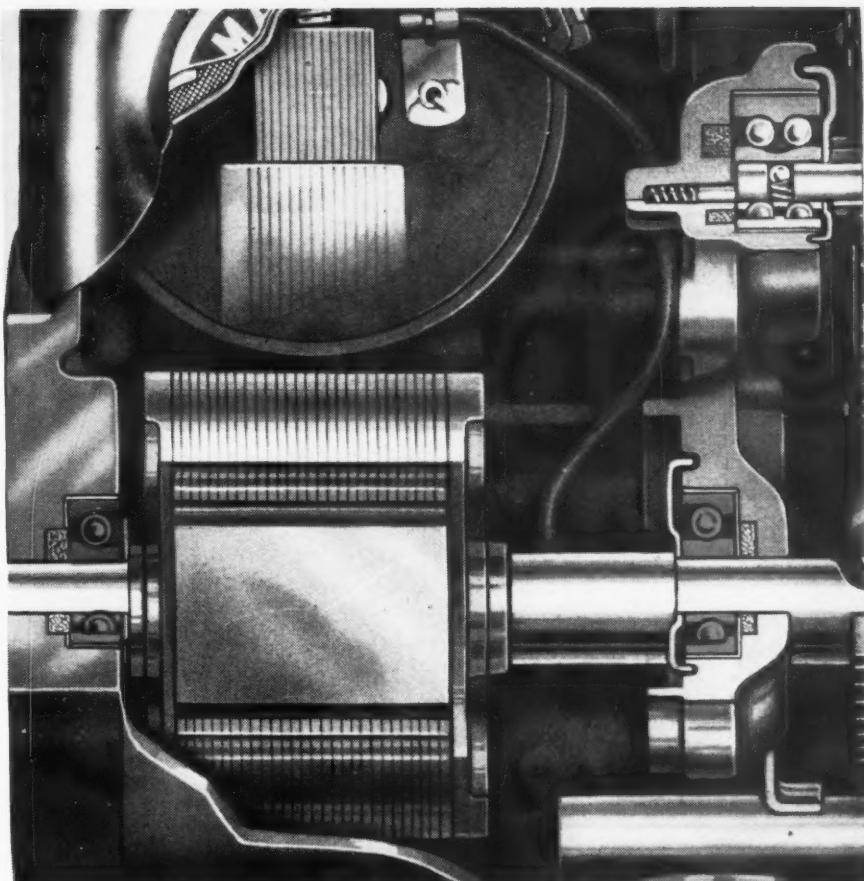
## *have Correctly-spaced Bearings*



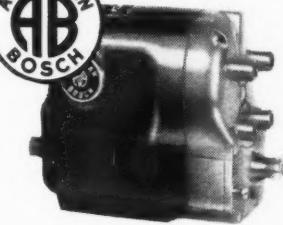
**CORRECT SPACING IS VITAL.** It is vital that spacing between rotor and rotor tunnel be maintained to hair-line accuracy. This can be done only by correctly-spaced bearings, maintaining proper alignment of the rotor under all operating conditions.



**AMERICAN BOSCH MAGNETOS** have correctly-spaced bearings for longer life and smoother, more-dependable performance.



**THEY CAN TAKE IT.** They stand up under the most gruelling conditions because they are balanced for smooth, vibration-free performance. You'll find many such hidden values behind the American Bosch trademark on all types of automotive electrical equipment.

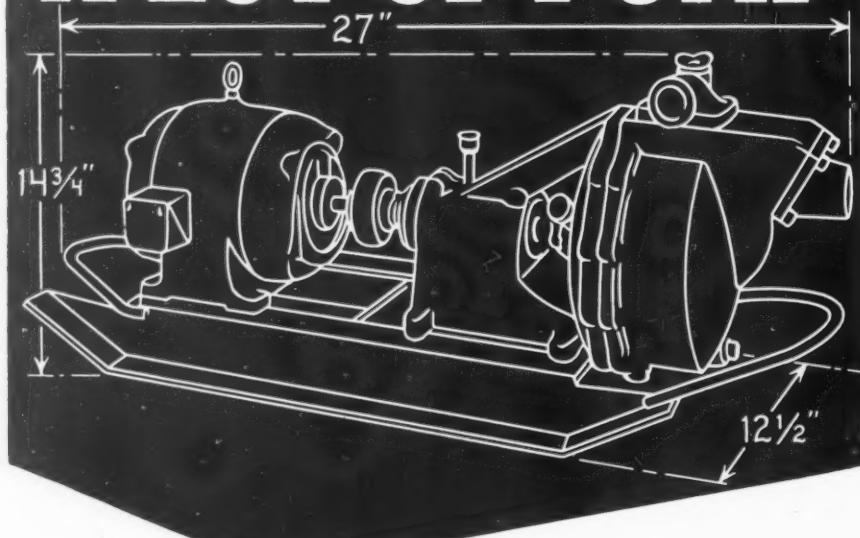


AMERICAN BOSCH CORPORATION, SPRINGFIELD 7, MASS.

# AMERICAN BOSCH

## *Super-Powered Magnetos*

# A LOT OF PUMP



## IN A SMALL SPACE

In mine locations where space is cramped, Gorman-Rupp self-priming centrifugal gathering pumps will handle the large quantities of water involved, yet take unbelievably small room. Size and capacities are shown here.

Model	Overall Length	Overall Width	Overall Height	Gals. per Hr. at 20' Total Head
40-40	27"	12 1/2"	14 3/4"	6900
60-60	27"	12 1/2"	14 3/4"	9600
60-100	34"	17 1/2"	21 1/4"	10800
125-100	34"	17 1/2"	21 1/4"	13200

These pumps are ideal for remote locations or automatic operation. No adjustments are required between prime and run. Start the motor and you start the water. Their self-priming is positive and powerful, as shown in an official test where both pump and suction line were dry, yet the pump primed through 300 feet of suction line and was under full operation in three minutes. Sand, muck or solids that will pass the intake cannot clog or harm a Gorman-Rupp. The impeller, on high grade roller bearings, is the only moving part. There are no reduction gears. All this adds up to absolute reliability. When maintenance is finally necessary, all wearing parts can be replaced by an inexperienced man with common tools.

Investigate the possibilities of these modern trouble-free pumps. They are fully described in a special mine bulletin. Write for it today.

**THE GORMAN-RUPP COMPANY**  
306 BOWMAN STREET, MANSFIELD, OHIO

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## New Ceiling Prices Named for St. Louis

New ceiling prices on coal have been announced for the St. Louis area, which includes the city of St. Louis and the section of St. Louis County east of the Lindbergh Drive. The new figures are generally slightly higher than the previous maximums permitted and include the 10c. a ton general increase in retail prices allowed by the Office of Price Administration to compensate retailers for increased production costs. The new ceilings for the first time establish flat dollar-and-cent ceiling prices on so-called smokeless coal from Arkansas and Oklahoma mines. Heretofore the maximum prices permitted for such fuels had been the highest price charged by coal dealers during December, 1941.

## N.C.A. to Exhibit At Home Exposition

The National Association of Home Builders of the United States will sponsor and conduct a national convention and exposition Feb. 25-28 at the Stevens Hotel, Chicago, where more than 5,000 professional home builders and contractors from all parts of the country are to meet and inspect the exhibits designed and constructed especially for this show by more than a hundred of the most prominent industrial and building materials firms in the United States. Attendance will be restricted to professional builders and people allied with the building industry.

The National Coal Association is sponsoring and financing an exhibit built around the theme "Why Coal Heat Adds Selling Value to Homes." The exhibit will occupy a space 40x60 ft. and will comprise models made to scale of typical coal-burning equipment for homes rather than samples of the actual equipment itself. This is calculated to present a visual picture of what bituminous has to offer the nation's professional builders of new homes and, through them, the prospective buyers of new homes.

Models are being constructed of a new-type smokeless furnace, a bin-feed stoker and warm-air furnace; a hopper-model stoker and hot-water boiler, and a new-type smokeless-magazine feed stove. Other types of equipment, depicted in the background, will include an illustration of a complete bin-feed ash-removal heating plant—to show that coal heating can be fully automatic. Other background material will sell the idea of planning new homes to make coal deliveries easy and good sense in designing and building adequate flues and chimneys.

This project is being handled by Marc G. Bluth, manager of the N.C.A. Chicago office, in conjunction with a group of coal-operator executives and engineers in Chicago comprising the following: B. R. Gebhart, vice president, and S. H. Viall, engineer, Chicago, Wilmington & Franklin Coal Co.; Robert Neal, sales promotion manager, Peabody Coal Co.; A. J. Chouinard, Island Creek Coal Sales Co.; Lynn Spring, Koppers Coal Division; Howard Herder, Sahara Coal Co., and N. H. Vaughan, general sales manager, Consolidated Coal Co. of St. Louis.

# The New W4.5 Athey

## MOBILoader



### HIGHLIGHTS OF THE NEW W4-5

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MORE STABILITY ★ HYDRAULIC  
"FINGER-TIP" CONTROL ★ BETTER  
VISIBILITY ★ GREATER PRODUCTION  
★ SIMPLIFIED DESIGN ★ OPERATES  
WITH "CATERPILLAR" DIESEL D4  
TRACTOR.

★ ★ ★ ★ ★ ★

More than 500 Athey MobiLoaders on tough loading jobs today are proving Athey MobiLoader performance and dependability. Now comes the greatly improved Model W4-5—a product resulting from intensive engineering research and two years of grueling field tests.

With many outstanding improvements in design the new Athey W4-5 MobiLoader, which is powered by the "Caterpillar" Diesel D4 Tractor, offers better visibility, hydraulic "finger-tip" control, greater stability, increased production, and other refinements.

To contractors, highway officials, miners, quarry operators, street departments, seeking low-cost, dependable loading, the Athey W4-5 MobiLoader is the money-saving answer. Its "straight-line" operation cuts loading time; boosts production and saves wear on the tractor. Get more facts on the new Athey W4-5 MobiLoader from your Athey-Caterpillar Dealer, or write direct to

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Holmes' Bicycle Type Head Sheaves are a heavy duty, light weight wheel, designed to eliminate undue bearing wear and avoid high inertia which consumes unnecessary power. Renewable steel liners with bolts locked against turning. Rim and liner full machine turned in the groove for true running and saving of rope wear. Hub ends machined for true running against bearings.

### PRODUCTION EQUIPMENT

**ROBERT HOLMES AND BROS.**  
 BINS - GATES - LOWERING SPIRALS - DUST-O-LATORS - SHAKING GATES  
 DANVILLE, ILLINOIS  
 FOR  
 MODERN MINING

These high quality, cast, all-steel spoke sheave wheels may be had in a wide range of sizes, for either single or double strand operation. They are full machine turned in the groove to give longer rope life. Hub ends perfectly machined to insure perfect alignment of bearings. May be had with or without bearings.



### Anthracite Groups Merge Activities

Activities of the Anthracite Institute and Anthracite Industries, Inc., have been consolidated under one industry organization, Anthracite Institute, it was announced Jan. 8 following a meeting of the directors of both groups. Frank W. Earnest Jr., formerly executive director of Anthracite Institute and president of Anthracite Industries, Inc., was elected president of the new Anthracite Institute.

To facilitate the administration of its increased activities, the consolidated organization will establish offices in Wilkes-Barre, Pa., to take care of all matters pertaining to production, statistics and other general industry affairs. The research laboratory now at Primos, Pa., will be moved to the Wilkes-Barre area as soon as suitable facilities are available.

Field representatives will continue their activities under the new arrangement. Public relations, advertising and marketing programs will continue under direction of the present New York office.

Other officers of the new combined organization are: M. R. Grover, vice president; Dr. R. C. Johnson, vice president in charge of research; E. H. Walker, vice president in charge of public relations; J. D. Jillson, secretary and assistant treasurer; H. R. Stanton, treasurer and assistant secretary. Directors: L. R. Close, president, Lehigh Valley Coal Co.; H. J. Connolly, president, Pennsylvania Coal Co.; Gordon C. Cooke, president, D. L. & W. Coal Co.; C. Millard Dodson, vice president, Locust Coal Co.; John C. Haddock, president, Haddock Mining Co.; C. F. Huber, chairman of the board, Glen Alden Coal Co.; George H. Jones, vice president, Stevens Coal Co.; F. W. Leamy, senior vice president, Hudson Coal Co.; Donald Markle, president, Jeddo-Highland Coal Co.; R. Y. Moffat, president, Moffat Coal Co.; Bruce Payne, president, Payne Coal Co.; James H. Pierce, president, Edison Anthracite Coal Co.; James Prendgast, president, Susquehanna Collieries Co.; Harold M. Smyth, president, St. Clair Coal Co.; Ralph E. Taggart, president, Philadelphia & Reading Coal & Iron Co.; James J. Tedesco, secretary, No. 9 Coal Co.; and J. B. Warriner, president, Lehigh Navigation Coal Co.

### Blasted Mine Sealed; 20 Bodies Still Inside

Last hope of recovering the bodies of 20 men trapped in an explosion in the mine of the Kentucky Straight Creek Coal Co., at Four Mile, near Pineville, Ky., Dec. 26, expired Dec. 31, when authorities decided that it was too big a risk to take to keep rescue crews working in the mine, considering fires, gas, and danger of other explosions. Seven men were taken out of the mine alive, two more removed were dead, and one died after coming out alive.

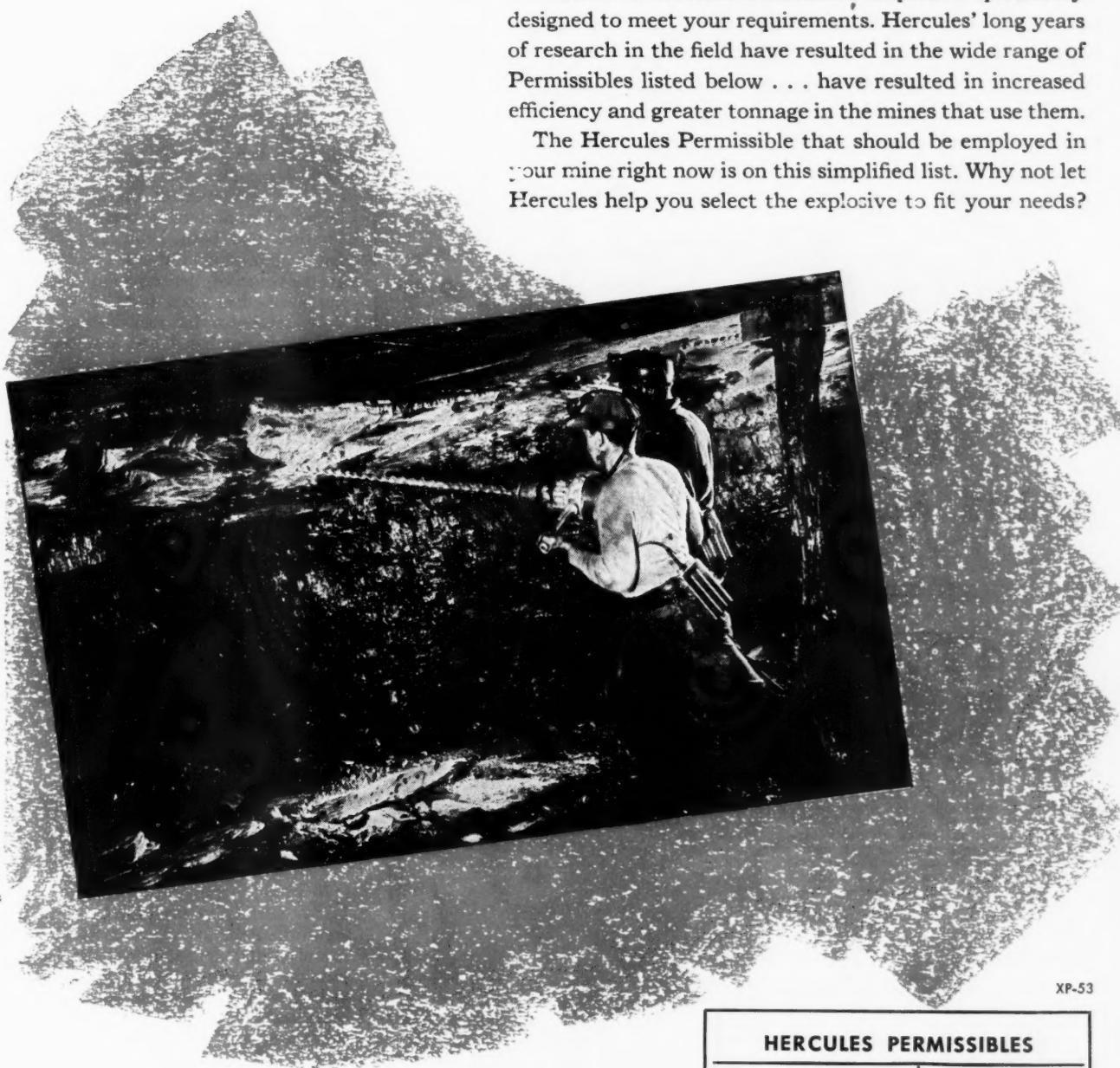
Conditions that caused the explosion "were allowed to exist, but it is not fair immediately to condemn" the company according to a statement Jan. 17 by Harry Thomas, chief of the Kentucky Department of Mines, at Lexington. After declaring

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Whatever your particular problem or purpose in blasting . . . there's a Hercules Permissible Explosive specifically designed to meet your requirements. Hercules' long years of research in the field have resulted in the wide range of Permissibles listed below . . . have resulted in increased efficiency and greater tonnage in the mines that use them.

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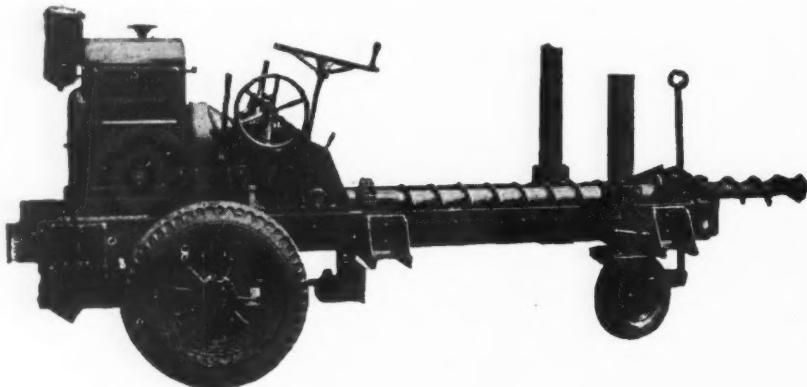
## HERCULES PERMISSIBLES

TYPE OF WORK	Approximate No. of $1\frac{1}{4}'' \times 8''$ Cartridges per 100 lbs.
For Lump Coal	
Red H* C	276
Red H* D	316
Red H* F	356
For Rock or Fine Coal	
Red H* B	280
Collier* C	320
For Wet Work	
Hercogel* A	200
Hercogel* 2	240

# PARMANCO Horizontal Drills

## "Positive Control Drilling"

Parmanco Horizontal Drills give you "Positive Control Drilling." Parmanco Vertical and Horizontal Drills are today's leaders in low cost, low maintenance drilling—All Parmanco Drills are equipped with patented Parmanco augers. Used by leading strip mine operators—Write us your drilling problems.



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THE  
Engineered  
BRONZE

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that the department "regrets very much that it was necessary to seal up the mine with 20 bodies still in it," Thomas announced that no definite date for reopening the mine had been set. "We can only say that the mine will be reopened as soon as conditions permit," he said.

The mine where the disaster occurred "has been operated for 30 years or more by several different managements before the present management took over," Thomas said. "It is correct that conditions were found, according to an inspector's report of almost a year ago, to be bad enough to require immediate rectifying.

"In all fairness to the Kentucky Straight Creek Coal Co., the Kentucky Department of Mines and Minerals wants it to be known that this company rectified most of the sub-normal conditions," Thomas continued.

"The ventilation of the mine had been improved immeasurably; over 200 permanent bratties had been built; a new, modern fan with explosion doors—which operated at the time of the explosion to save the fan itself—had been installed and a rock-dust distributor for rock-dusting the mine had been purchased and was on the job. Unfortunately, rock-dusting itself had not yet been started."

Thomas said the Kentucky Straight Creek Coal Co. "cooperated in every way possible" during the recovery work. "At no time was the recovery work held up for a minute because of lack of supplies or because of any lack of cooperation of the management.

"Though many assumptions have been made to the contrary, the Kentucky Straight Creek Coal Co. was entirely within its rights and was operating according to law by operating under common law instead of under compensation law. Under common law, the company is responsible for compensation, and so far we have no reason to assume anything except that compensation will be paid the dependents of the deceased men."

### Amends Application Basis for CC Rating

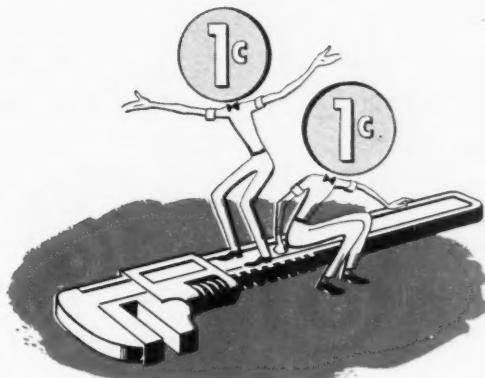
War Production Board Limitation Order L-269, relating to the production of underground coal-mining machinery and whereby manufacturers of such machinery received priorities assistance in obtaining materials and whereby their delivery schedules of complete machines were controlled by the Mining Division of WPB, was terminated as of Dec. 29, leaving manufacturers of coal-mining machinery free to deal with their orders and deliveries according to their own wishes (except as hereinafter noted).

Coincident with the termination of L-269, the Civilian Production Administration re-issued in amended form Direction No. 1 to Priorities Regulation No. 28, which governs the issuance by CPA of the CC priority rating to such civilian orders (for materials, repair parts, operating supplies, or new equipment) as are deemed to be deserving (from the standpoint of industrial reconversion and the civilian economy) of priorities assistance. Direction No. 1 to PR 28 dealt with the assignment of CC ratings "to increase production of coal."

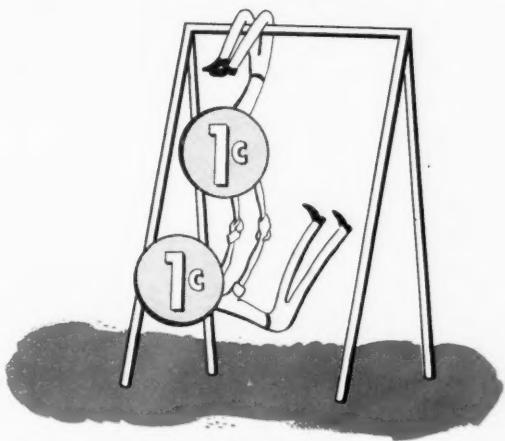
Applications for CC rating, made on



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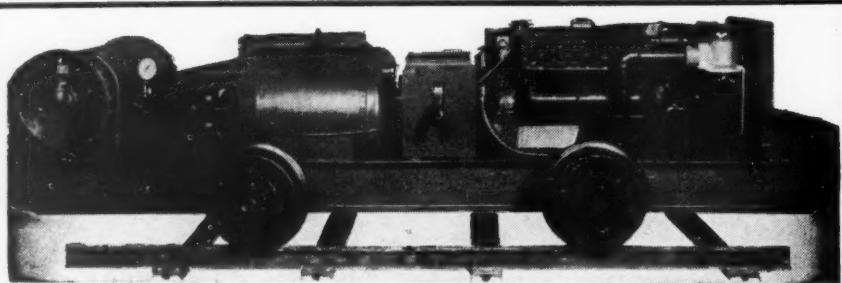
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"LOWBOY"  
Model 110  
MINE CAR  
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The Model 110 Acme "Lowboy" Mine Car Air Compressor is designed to meet the mining conditions existing today, especially in mechanized mining.

Low—compact—light weight—it is adaptable to both high and low seam operations and offers the additional advantage of efficient, economical service.

Designed particularly for mine service the unit is an adaptation of the Schramm Fordair which has proved highly efficient and dependable in many fields of service.

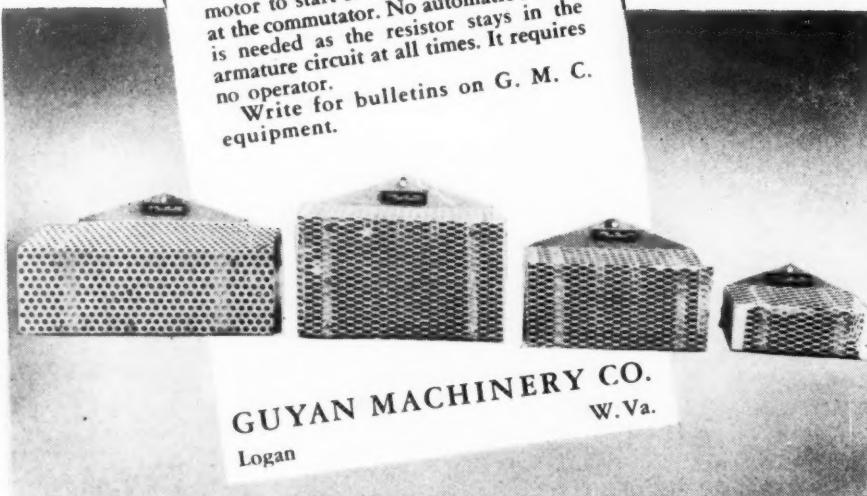
Its mechanical simplicity—portability—and rugged construction make it ideal for mine use.

**ACME COMPRESSOR CO.**  
Williamson, West Virginia

**G.M.C.** Choke Starting  
Resistances for  
smoother  
starts with  
no arcing

G. M. C. Choke Starters feature a resistance coil connected in series with the armature of a D. C. motor. Resistance is adequate to choke back the initial inrush of current when a motor is connected directly across the line, or when a circuit breaker has been out and recloses on the motor. This permits the motor to start smoothly with no arcing at the commutator. No automatic switch is needed as the resistor stays in the armature circuit at all times. It requires no operator.

Write for bulletins on G. M. C.  
equipment.



**GUYAN MACHINERY CO.**  
Logan  
W. Va.

Form 541A, should be mailed to OPA at Washington, attention of the Mining Branch, processing of such applications in field offices having been discontinued.

**Urge Both Oil and Gas  
For Big-Inch Lines**

There seems to be a difference of opinion as to the proper disposition of the two Big Inch pipelines. The Surplus Property Administration favors their use in petroleum service, whereas the consulting firm of Ford, Bacon & Davis, in its report to the Reconstruction Finance Corporation, says the lines have no postwar economic use as oil carriers but their value for conversion to natural gas might warrant a sale price of between \$40,000,000 and \$80,000,000.

In its report to Congress, the first week of January, SPA recommended that first preference be given to continuing the lines in petroleum service and that their disposal for conversion to natural gas be favored only as a last resort—"only if it proves impossible to keep the lines in petroleum service and only if the national security is otherwise adequately protected." It also was stated that "disposal to private interests will be given preference over any form of government financing, ownership or control."

If sale or lease of the lines for the movement of petroleum products to the eastern seaboard proved to be unfeasible, said SPA, then the lines should be utilized for movement of oil to serve interior points. It was suggested, further, that "public operation on a full cost basis (as common carrier) may have to be considered if all effort to dispose of the lines to private industry should fail."

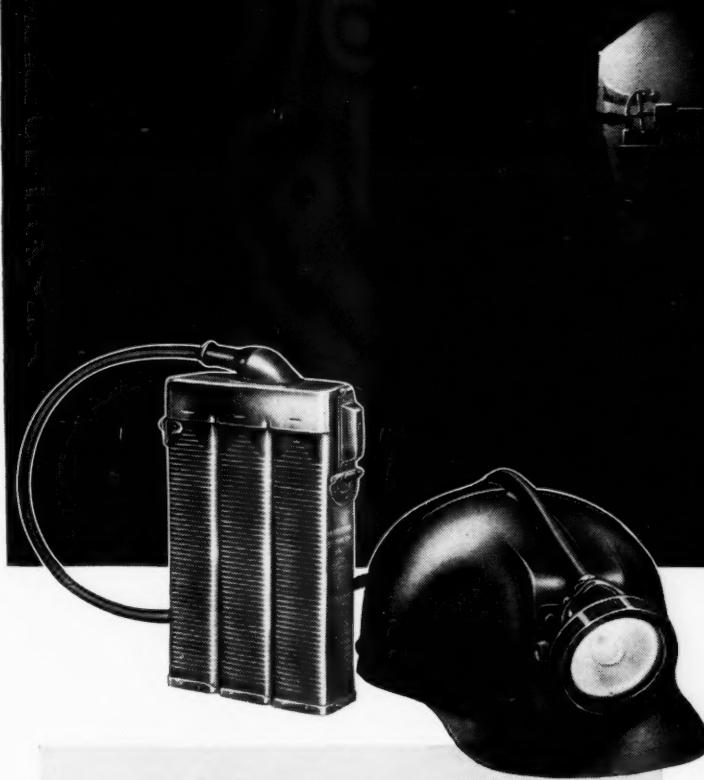
The Ford, Bacon & Davis report stated that a careful study of the cost of converting the Big Inch lines to natural-gas use, their value for this purpose compared with costs of a new line built specifically for the purpose, and the economics of such utilization were included in the report.

The engineers reported that an ample supply of natural gas could be contracted for near the termini of the two lines and offered the opinion that Texas and Louisiana State authorities would not object to its export if the field price were sufficiently high.

Wholesale substitution of natural gas for manufactured gas in Atlantic seaboard markets would be highly questionable, the engineers declared, but it would be entirely feasible to substitute natural gas for the 9,000,000 to 10,000,000 bbl. of oil used annually to enrich water gas in this area, thus increasing the heating value of the gas without reducing the volume of coal used in its manufacture. The increase in heating value of the gas would require an increase in consumer prices, and the engineers gave no opinion as to the possible attitude of marketing companies on this point, but they stated that natural gas delivered in the New York-New Jersey area at a price of 20 to 23c. per 1,000 cu. ft. would be sufficiently attractive to induce some companies to make the change.

On the basis of paying about \$80,000,000 for the two Big Inch lines and making other installations bringing the total investment to \$110,000,000, the engineers calculated

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MEANS HIGHER INDIVIDUAL PRODUCTION



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**CAP LAMPS**

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Drop forged for strength, Superior Swivel and Single Link Couplings are built to stand the gaff. No welds to let go with resulting wrecks. Superior Couplings on your mine cars will prevent accidents and reduce haulage costs. Order Superior Couplings for your replacements and specify them on new equipment.

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that the system would have to operate at capacity and sell gas at 26c. per 1,000 cu.ft. in order to pay out. On the other hand, they calculated that if the gas were sold for only 20c. per 1,000 cu.ft. the purchaser could not afford to pay more than about \$40,000,000 for the two lines, including rights of way.

### Mine Fatality Rate Shrinks Farther

Accidents at coal mines of the United States caused the deaths of 60 bituminous and 9 anthracite miners in November last, according to reports furnished the U. S. Bureau of Mines by State mine inspectors.

With a production of 50,720,000 net tons, the accident death rate among bituminous miners in November last was 1.18 per million tons, compared with 1.30 in the preceding month and 1.71 in November, 1944.

The anthracite fatality rate from accidents in November last was 1.99, based on an output of 4,533,000 tons, against 2.28 in the preceding month and 2.98 in the eleventh month a year earlier.

For the two industries combined, the accident fatality rate in November last was 1.25, compared with 1.41 in the preceding month and 1.83 in November of the preceding year.

Fatalities during November, by causes

#### U. S. COAL-MINE FATALITIES IN NOVEMBER, 1945, BY CAUSES AND STATES

State	Underground							Total Under- ground	Open- Cut	Sur- face	Grand Total
	Falls of Roof	Falls of Face	Haulage	Gas or Dust Explosions	Explosives	Machinery					
Alabama	2	..	1	..	..	..	3	..	..	..	3
Colorado	1	..	1	..	..	..	2	..	..	..	2
Illinois	3	..	5	..	2	..	3	..	1	2	4
Kentucky	4	..	..	..	..	..	11	1	2	14	1
Maryland	..	..	..	..	..	..	..	1	..	..	1
Missouri	1	..	..	..	..	..	1	..	..	..	1
Ohio	1	..	..	..	..	..	1	..	1	..	2
Oklahoma	1	..	..	..	1	..	1	..	..	..	1
Penn. (bit.)	4	..	..	..	..	..	6	1	..	..	7
Utah	1	..	..	..	..	..	1	..	..	..	1
Virginia	1	..	..	..	..	..	2	..	..	..	2
West Virginia	13	1	5	..	..	..	19	..	1	..	20
Wyoming	..	..	1	..	..	..	1	..	..	..	2
Total bituminous	32	1	13	1	3	1	51	3	6	60	60
Penna. (anth.)	5	..	2	..	1	..	8	..	1	..	9
Grand total	37	1	15	1	4	1	59	3	7	..	69

#### DEATHS AND FATALITY RATES AT U. S. COAL MINES, BY CAUSES OF ACCIDENTS\*

Cause	January–November, 1944 and 1945									
	Bituminous		Anthracite		Total		Bituminous		Anthracite	
	Number Killed	Killed per Million Tons	Number Killed	Killed per Million Tons	1944	1945	1944	1945	1944	1945
Underground:										
Falls of roof and face	551	0.960	0.757	76	67	1.278	1.323	627	466	0.989
Haulage	212	0.369	0.343	20	20	0.336	0.395	232	201	0.366
Gas or dust explosions:										
Local	8	0.014	0.019	3	5	0.050	0.099	11	15	0.017
Major	22	0.039	0.074	..	..	..	..	22	39	0.055
Explosives	15	0.26	0.044	17	9	0.286	0.177	32	32	0.050
Electricity	33	0.057	0.036	3	2	0.050	0.040	36	21	0.057
Machinery	36	0.063	0.066	..	2	..	0.040	36	37	0.057
Shaft	5	0.009	0.119	5	1	0.084	0.020	10	11	0.016
Miscellaneous	94	0.164	0.027	16	10	0.269	0.197	110	24	0.174
Stripping or open-cut	26	0.045	0.044	8	2	0.134	0.040	34	25	0.054
Surface	50	0.087	0.102	11	10	0.185	0.197	61	64	0.096
Total	1,052	1.832	1.532	159	128	2.672	2.528	1,211	935	1.911

\*All figures subject to revision.

# THE HEART OF A MODERN PREPARATION PLANT

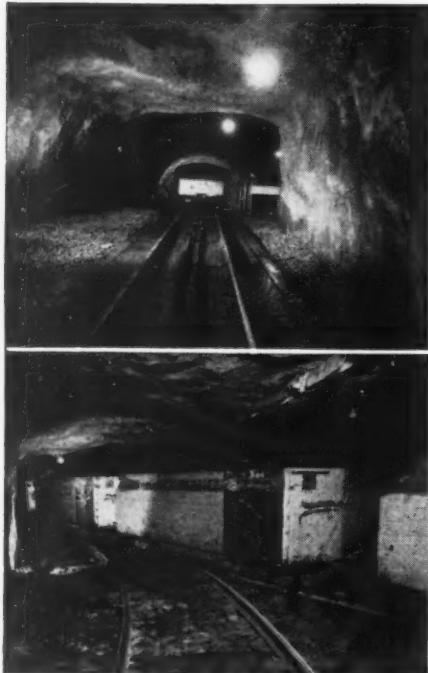


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### MAINTENANCE COSTS ARE LESS

with "GUNITE" linings of roofs and sides of haulageways, slopes, entries and underground rooms.

"GUNITE" stops air slacking and eliminates most timbering. Roof fall hazards are minimized. The "GUNITE" surface is nearly white, resulting in much better visibility.

One inch of "GUNITE" is usually all that is needed but under particularly bad conditions it may be mesh reinforced and applied to a thickness of 2" or more.

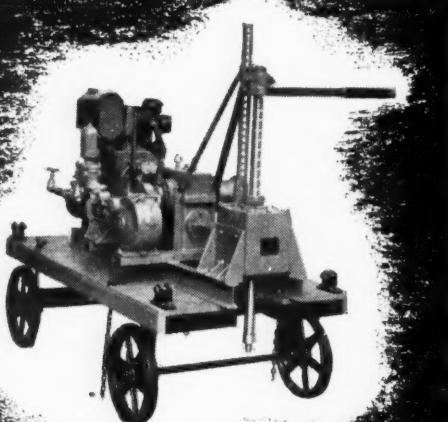
The work can be done without hindering mining operations.

An application of "GUNITE" practically eliminates maintenance expense thereafter.

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### RUGGED PORTABLE CORE DRILLS

Acker Drills are simple to operate and easy to move in rough country.—They can be mounted on a small motor truck—drag—or trailer.

Determine depths of overburden before strip mining and thickness and quality of coal seams.

Tools and equipment for all sub-surface exploration.

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and states, as well as comparable rates for the first eleven months of 1944 and 1945 were as tabulated on p. 174.

### Coal Publications

*The Heating of Steel*, by W. H. Mawhinney. 265 pp., 6x9½ in.; cloth. Price, \$4.75. Rheinhold Publishing Co. A thorough review of the subject discussed, which is one which should be studied by all who wish to expand the market for coal in the steel industry and meet its requirements.

*Typical Analyses Bituminous Coal Produced in District 9*. Data Book Vol. 6, U. S. Bureau of Mines. 33 pp. 11½x9½ in.; paper cover. Price, 20c. Publication gives a map of western Kentucky (counties only), maps of five districts, showing mines, map references, code members, counties, seams, locations, originating railroads, also specimen analyses for several seams, whether mine, tipple or delivered coal analyses; ranks of the several coals with highs and lows in analyses, B.t.u. and ash-softening temperatures arranged by counties and by seams. Delivered coal analyses are for coal delivered to U. S. Government for its use.

*American Machinist's Handbook and Dictionary of Shop Terms*, 8th Edition; by F. H. Colvin and F. A. Stanley. 1,546 pp., 4½x7 in.; cloth. Price, \$5. McGraw-Hill Book Co., Inc. The first edition appeared in October, 1908, and the total issue to date has been 509,000. A practical and authoritative book brought up to date.

*Basic Electrical Engineering, Circuits, Machines, Electronics*, by A. E. Fitzgerald. 443 pp., 6x9 in.; cloth. Price, \$3.75. Book is intended for students who already have had a course in college physics and some experience in simple direct-current theory but knowledge of alternating current is not assumed.

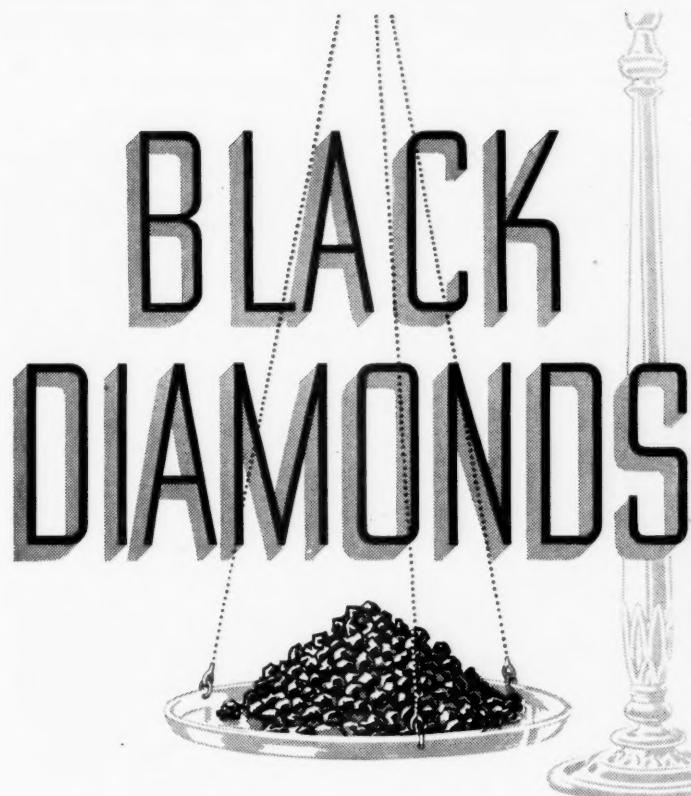
*Lessons in Arc Welding*, 2d edition. The Lincoln Electric Co. 176 pp., 5½x8½ in.; cloth. Price, 50c. postpaid U. S. A.; 75c. elsewhere. A simple but complete exposition of the art of welding by electric arcs. Some new material in this edition.

*The Efficient Use of Fuel*. 807 pp., 5½x8½ in.; cloth. Price, \$8.50. Chemical Publishing Co. Reprint of a book prepared under the direction of the Education Subcommittee of the Fuel Efficiency Committee of the British Ministry of Fuel and Power.

*The Theory and Practice of Reinforced Concrete*, 2d edition; by C. W. Dunham. 558 pp., 5½x8½ in.; cloth. Price, \$4.50. McGraw-Hill Book Co.

*Theory and Applications of Electron Tubes*, by H. J. Reich. 716 pp., 5½x9 in.; cloth. Price, \$5. Basic principles presented are applicable to radio engineering, industrial electronics, power control, electrical measurements and other fields. Chapters on detection, modulation and oscillators have been almost completely rewritten.

*A.S.T.M. Standards on Coal and Coke and Related Information*, 1944. 124 pp., 6x9 in.; paper. Price, \$1.50. Includes 5 specifications, 24 methods of testing and evaluation and 6 definitions.



## MINE MORE WITH **WHEAT** THE *productive* CAP LAMP

It is a proven fact that light and productivity go hand in hand. Especially is this true underground where more and better light always means *more and better production—with a far greater margin of safety.*

Wheat, the *approved* cap lamp can actually *reduce fatigue, lower the accident rate and raise the output level as much as 20% per man day!* Even at the end of the shift Wheat remains bright and maintains more than 80% of its initial efficiency.

Because these are dollar-producing facts that no mine owner or operator can afford to ignore, it will pay you to investigate Wheat—the *productive* cap lamp—now.

### WHEAT GIVES YOU THESE EXCLUSIVE BENEFITS

1. 20% Brighter light at working face.
2. Compact, lightweight, balanced, streamlined.
3. Steady, dependable light; 80% efficient at the end of shift.
4. Emergency bulb means miner is never in the dark.
5. Simple, fool-proof, self-service charging system—battery charged through headpiece and cord of lamp.

**KOEHLER — THE FIRST LAMP APPROVED BY THE U. S. BUREAU OF MINES**

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SPECIALISTS IN MINE LIGHTING  
FOR MORE THAN 30 YEARS



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# Equipment News

## Fire Extinguisher

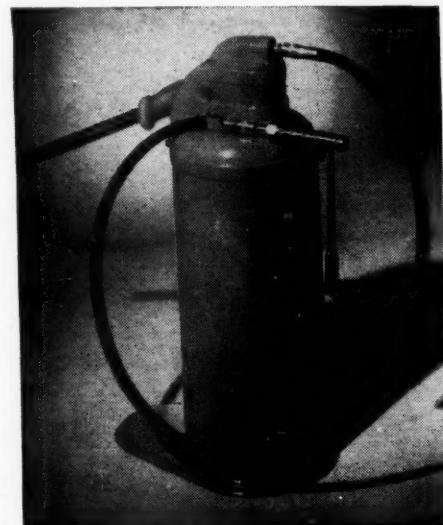
A new carbon dioxide hand fire extinguisher with quick operating features developed during the war is offered by the B. F. Goodrich Co., Akron, Ohio. Made to meet the full approval of fire underwriters, the container holds 4 lb. of carbon dioxide and comes with a carrying handle and control button designed for fast operation. It can easily be carried in one hand, with the thumb of the carrying hand operating the pushbutton. A horn swivel quickly raises or lowers as needed, remaining in lower position when attached to the wall rack furnished with each extinguisher, together with a quick release chain. Painted vivid orange and black for high visibility, the extinguisher may be recharged at regular refill service establishments.

backhead with swivel to prevent fouling.

The controls of the positive feed mechanism are within easy reach of the operator. A standard roller chain is guided over large-size gear and idler sprockets. An improved chain takeup is provided. Power is supplied by a six-vane rotary air motor. The gear case incloses large-size gears on tapered roller bearings. A rigid heavy-duty centralizer with replaceable bushings may be adapted to line drilling. The sliding trunnion is adjustable on the side instead of underneath the guide channel and is easily adjustable in all drilling positions. An adjustable anchor prong on the side of the guide channel holds the feed assembly in perfect alignment.

right man, it aims to eliminate costly machine down-time delays and lubricate all types and sizes of machines, regardless of varied kinds of fittings, in minimum time—on the job or in the shop.

Chief among its features is the Pad-Pak tamper blade, which is recommended to eliminate air pockets without the use of



## Wagon Drill

Worthington Pump & Machinery Corp., Harrison, N. J., offers a newly designed Blue Brute wagon drill, the UMW-40, which uses a heavy-duty drifter, the cylinder of which has a diameter of 4 in. It has rifle-bar rotation and positive-acting end-seating valve with circumferential seal. Added features are: one-piece chuck sleeve, positive drill-steel locking chuck for 1 1/4-in. hollow round-lug shank drill steel, one air hose to

## Truck

A new type truck designed for fast, long-distance hauling has been developed by the truck division of the Eisenhauer Mfg. Co., Van Wert, Ohio. The vehicle has a payload capacity of about 20 tons through special arrangement of wheels. New features include application of four front steering wheels to make possible greater load capacity through better distribution. There are three rear axles, including two driving or "live" axles, with a "dead" axle between. Dual



wheels are on all three rear axles and singles on the two front axles.

Over-all length is 35 ft. with a truck bed of 25 ft. Power is from two standard-make 93-hp. motors mounted in line, one under the hood and the other beneath the cab.

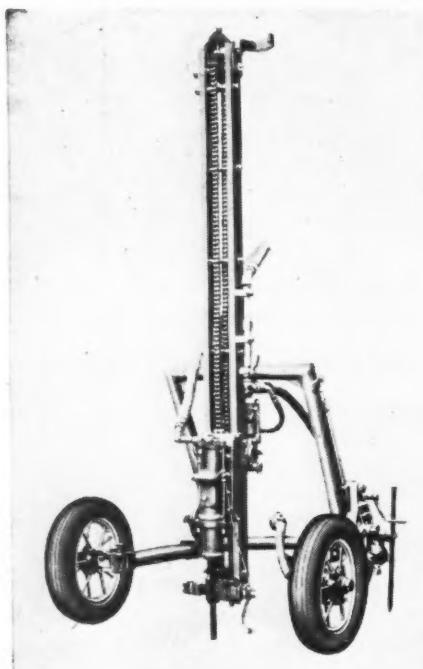
bleeder valves, and the Jiffy Change adapter, with a universal swivel as an integral part of the hose line, which permits quick adapter change for button-head, hydraulic or pin-type fittings.

## Excavator

A new 1 1/4-yd. Model 38-B fully convertible excavator is offered by Bucyrus-Erie, South Milwaukee, Wis. Designed for fast, tough digging, the 38-B, according to the company, has big ultra-responsive clutches and brakes with direct control to give the operator accurate "feel" for continuous large output.

Fundamentally constructed for equal effectiveness as a shovel, dragline, crane or clamshell, the new unit is said to offer a number of operating refinements. As a dragline it has big working ranges with a new mast-type suspension available for long booms, full rotating fairlead and a selection of wide, long and tapered and crawler mountings. The new 38-A shovel has a strong but light boom with large-diameter point sheaves for effective application of digging force, independent positive twin rope crowd and high-lip all-welded dipper for fast filling and dumping in rock or dirt.

As a crane, the 38-B offers long booms

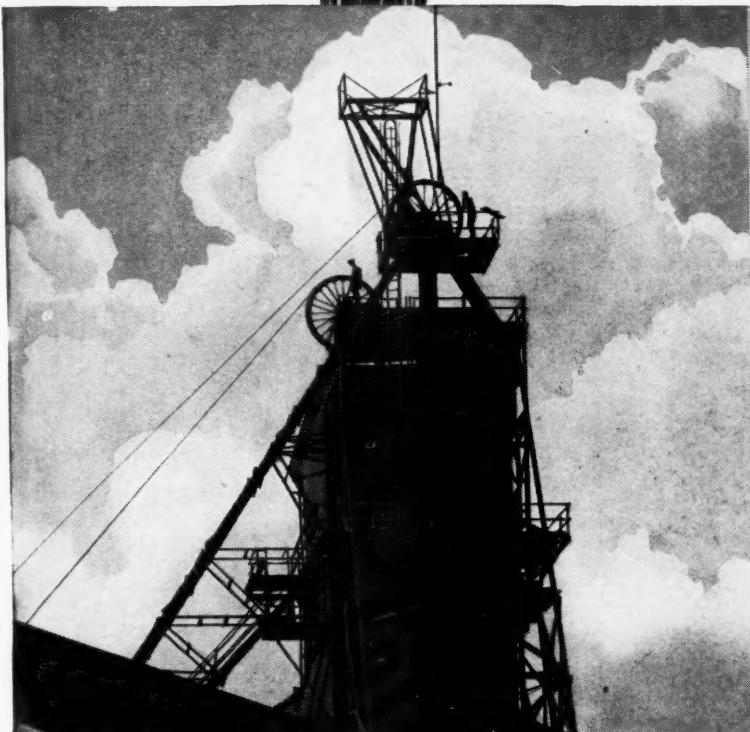


## Lubricator

Balcrank, Inc., Cincinnati 9, offers the "Minit" high-pressure portable lubricator, which is said to keep machines rolling longer, producing more, costing less. Placing the responsibility for adequate lubrication on the

J&L PERMASET

PRECISIONBILT PRE-FORMED WIRE ROPE



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PERMASET PRE-FORMED  
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**Precisionbilt to suit the job — stay on the job.** Shaft ropes . . . feed ropes . . . conveyor ropes . . . drag lines — right through the catalog of wire rope for mining — you will find the J&L rope to suit the job and stay on it: For J&L Wire Rope is Precisionbilt from J&L Controlled Quality Steel . . . by men of skill and experience . . . on machines of extreme accuracy. For extra service . . . extra long life . . . J&L Permaset Pre-formed pays extra dividends on your equipment investment.

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PRECISIONBILT PRE-FORMED WIRE ROPE

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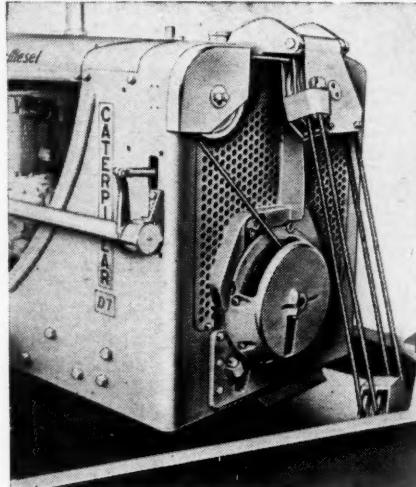
with optional jib extensions, two-clutch-operated independent boom hoist with full, accurate power control of raising and lowering, and optional independent two-speed propel.

### Cable-Control Unit

Production of a new single-drum front-mounted cable control embodying the smooth performing multiple-disk-type clutch that has been a feature of the company's track-type tractors for years is offered by Caterpillar Tractor Co., Peoria, Ill.

Simple, easy operation of the new bulldozer for Caterpillar D8, D7 and D6 tractors is possible with this new No. 24 front single-drum cable control, whose line pulls are said to be ample to meet the most severe requirements imposed by bulldozer operation.

F.p.m. line speed, bare drum, is 357 for the D8, 375 for the D7, and 525 for the D6.



F.p.m. line speed, full drum, is 527 for the D8, 552 for the D7, and 780 for the D6. Drum diameter for all three models is 9 in.; length,  $2\frac{1}{2}$  in., and drum-flange diameter, 14 in. The cable size is  $\frac{1}{2}$  in. Drum capacity is 75 ft. and the clutch has twelve friction surfaces with an area of 564 sq.in. Clutch facing is metallic and brake-band diameter and width in each model is  $15 \times 2\frac{1}{2}$  in. The effective brake area is 11 sq.in.; brake lining is molded and the approximate weight of each model, including adapter group, is 550 lb.

### Spatterproof Welding

Two new weld-spatter-resistant compounds, Nos. 9951 and 9952, are offered by the Electric Welding Division of the General Electric Co., Schenectady, N. Y. Furnished in powder form, ready to be mixed with water, they are identical in performance except that No. 9951 is non-adherent and can be readily removed with an air hose or dry cloth, whereas No. 9952 is semi-adherent but can be quickly and easily removed with a damp cloth or a direct stream of water.

The surface of the work, even if slightly oily, it is said, does not require wetting before the compounds can be applied, and a special ingredient eliminates the necessity of a water-soluble binder to obtain adhesion. Therefore, since the compounds are inert

Centrifugal Pump      Combination Foot Valve and Strainer      Model 3100 Reversible Pump

DESIGNERS AND BUILDERS OF PUMPS FOR SPECIAL NEEDS. Famous for soundly engineered reliability, Marine Products has set a record for world-wide service and low maintenance costs. Use M-P equipment in your field.

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Electric Pump



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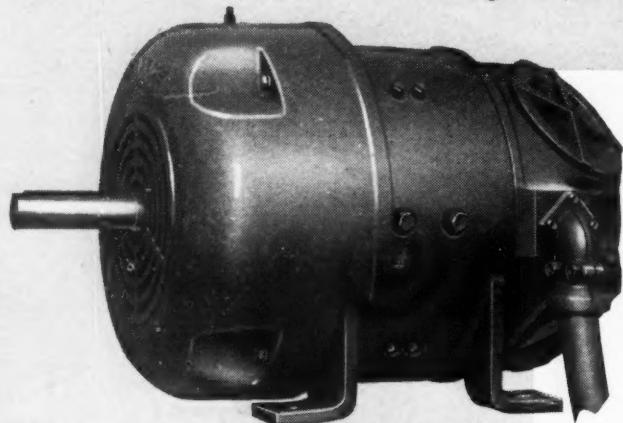
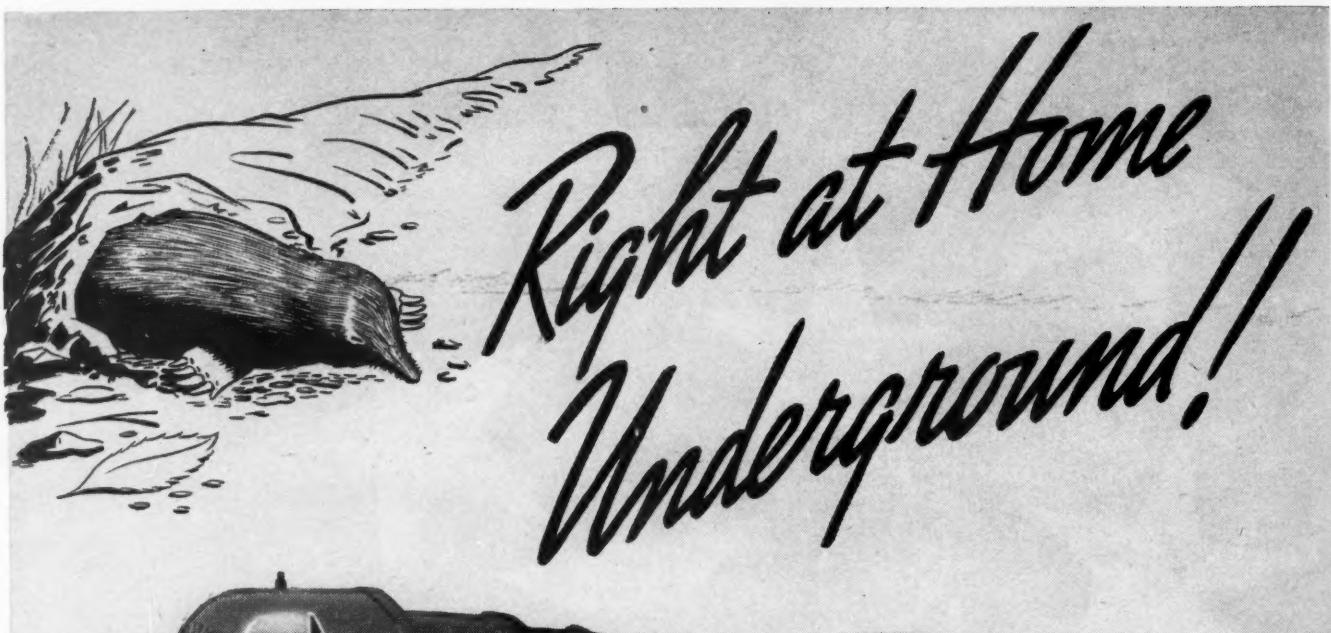
The Cleveland-Cliffs organization, seasoned by nearly a century of business experience, is set up to distribute the output of your operations. Experience has shown that our docks, our Great Lakes Vessel Fleet, our branches throughout twenty-six states and our trained and seasoned sales personnel provide the proper sales outlet with which to meet the demands of modern business economy.



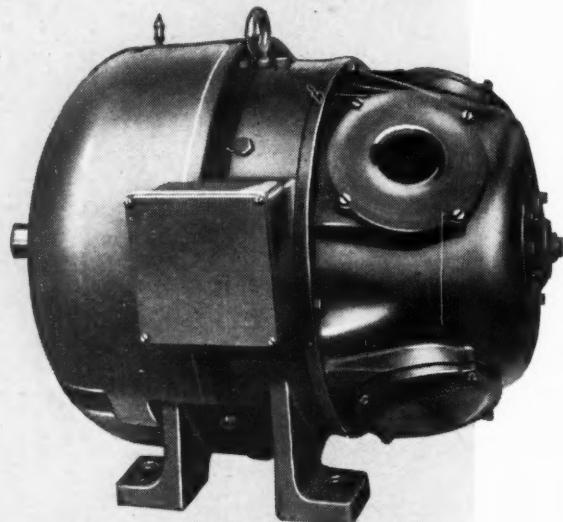
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**THE CLEVELAND-CLIFFS IRON  
COMPANY**

UNION COMMERCE BUILDING  
CLEVELAND 14, OHIO



Reliance Fully-enclosed, Fan-cooled D-c. Mine Motor for use on permissible underground equipment.



Reliance Fully-enclosed, Fan-cooled D-c. Motor for use where permissible equipment is not required.

With Reliance Motors especially designed, electrically and mechanically, for bruising jobs underground, you enjoy exceptional freedom from tonnage losses due to power failures. These motors that are right at home "down under" have vital parts thoroughly protected against coal dust and moisture. They *stay* clean and dry—last longer with less maintenance. You make a *wise choice* when you invest in modern mining equipment powered by Reliance Motors.

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Birmingham • Boston • Buffalo • Chicago • Cincinnati • Denver • Detroit • Gary  
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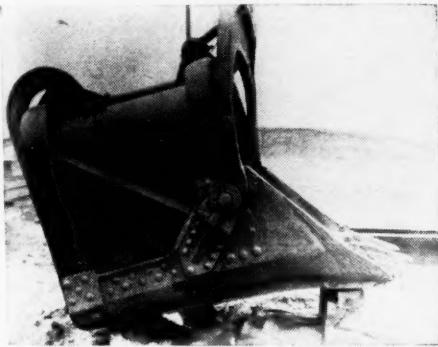
**RELIANCE** A-C D-C **MOTORS**

and cannot burn, they are completely smokeless.

The compounds are easily mixed and applied: water is added slowly until a thin paste is obtained. No lumping occurs, and the mixture can be applied with an ordinary bristle brush. The brush can be safely left in the compounds afterward or readily cleaned with cold water. One gallon of either compound will adequately cover 450 to 750 sq.ft. of work, depending upon the thickness with which the compound is applied.

### Lightweight Dipper

Lighter weight through use of manganese-steel castings for the parts most subject to wear and shock is the principal feature cited for the new ESCO cast-welded general-purpose dipper by the maker, the Electric Steel Foundry, Portland, Ore. Fabrication



and welding techniques mostly promoted and developed during the war are employed in construction of the back and sides. Standard sizes provide capacities of  $\frac{1}{2}$  to 5 cu.yd. and larger sizes are available on special order. Bulletin No. 157 gives additional details.

### Low Transformer; Magnetic Contactor

Improving voltage at the load, underground, by reducing cable voltage drop is the objective of a new dry-type air-insulated transformer made by Westinghouse Electric Corp., Pittsburgh, Pa. Only 25 $\frac{1}{4}$  in. high, it is designed for use in the mine workings, is 150-kva., three-phase, 2,400- to 240-volt and weighs 3,600 lb. It is a complete power center with high-voltage plug entrance cables and low-voltage De-ion circuit breakers. High-temperature silicone-bonded insulation is used on windings. Case, bushings and fittings are kept tight with metallic seals. The unit is semi-portable, permitting movement by skidding.

Small, compact design saves panel space and unit construction speeds assembly and assures accurate alignment of all parts in its Type M d.c. single-pole magnetic contactor, declares the Westinghouse company. The contactor is entirely assembled on a formed frame that also serves as a path for the magnetic flux. It is particularly applicable where space is limited and severe duty is expected, as in mines.

The small frame contactors in this line are limited to applications where the coil voltage and voltage of the circuit being in-

# DRY SAND

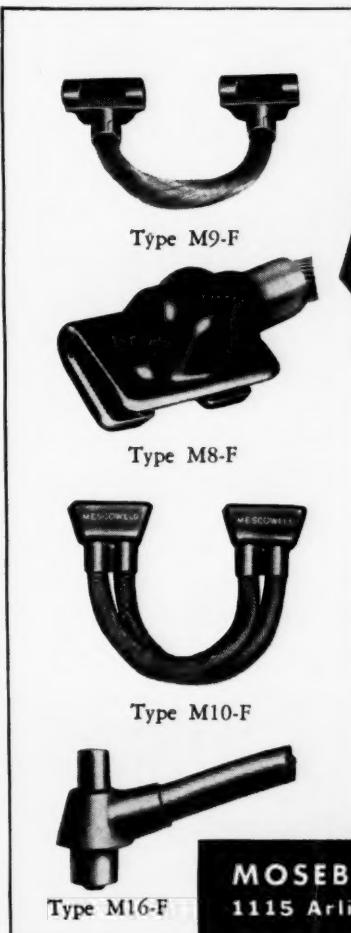
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**PERFECTION**  
**CONE STOVE DRIERS**

will get more  
coal out faster!

Spinning wheels won't pull heavy loads. It takes sand . . . dry sand . . . running freely from locomotive to track to give hard-driving wheels traction and real pulling power!

Get dry sand at HALF the usual cost! Use the "PERFECTION" Cone Stove Sand drier. Standard size dries 8 to 10 tons in 8 hours . . . capacity can be increased to 12 to 14 tons. Write for full particulars.

**PRINCETON**  
**Foundry & Supply Co. Princeton, W. Va.**



**MORE POWER  
HEAVIER HAULS  
FEWER DOWNS**

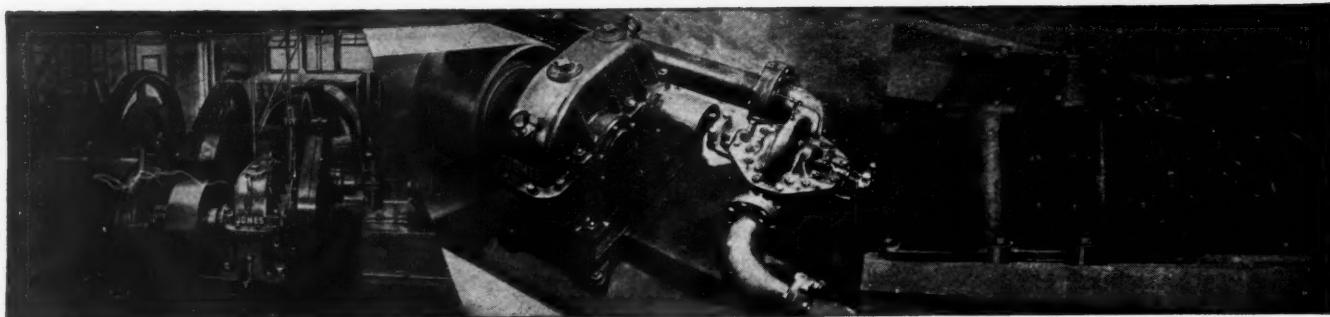
**WITH**  
***Mescoweld***  
**RAIL BONDS**

The Mescoweld line comprises 18 soundly engineered types of rail bonds, providing for every service condition. Preferred for many years by outstanding coal producers of America. Cables and steel terminals are welded by the patented Flashwelding Process, assuring contact of every strand of wire. Terminals are oversize, with large weld area for increased conductivity.

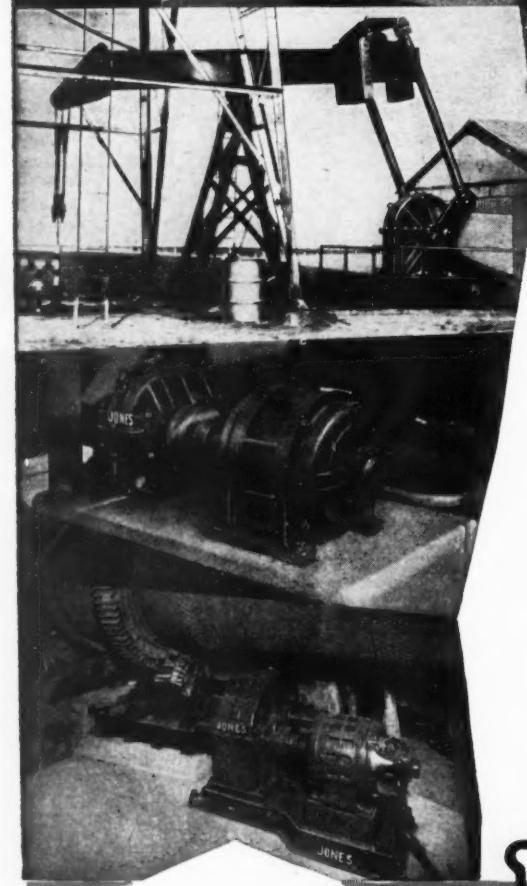
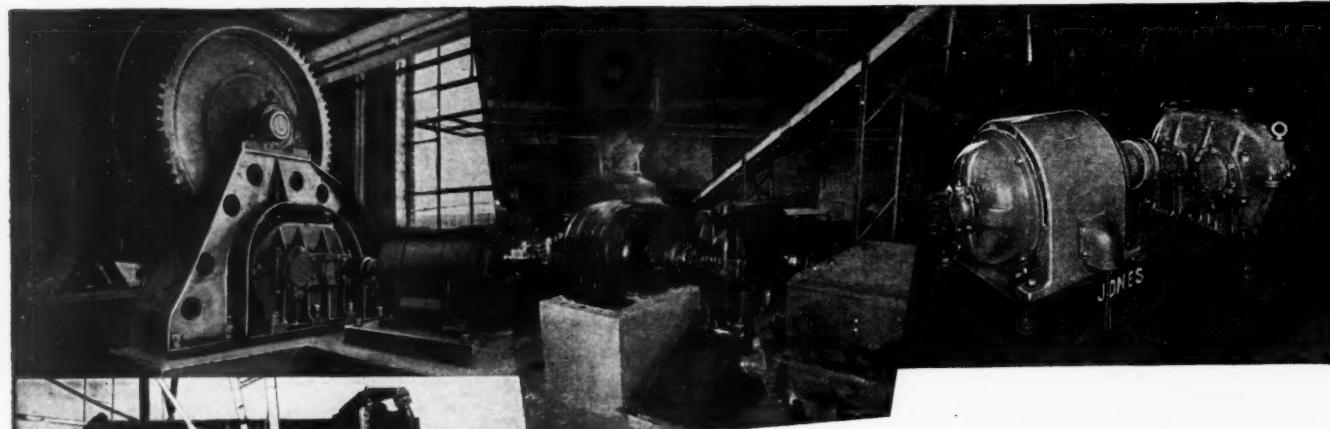
Write for catalog, or phone Hemlock 8332, for complete details.

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★ For many years the W. A. Jones Foundry & Machine Company has been called upon as a consultant, to help solve a great variety of difficult drives involving the use of speed reducers, gears and other transmission machinery. In many cases these installations have called for the development of special equipment, designed and built to suit the specific requirements of the project.

As a result of these years of experience, involving numerous special problems in the mechanical transmission of power, the Jones organization has collected a vast amount of technical data relating to work in various fields.

Specific bulletins and catalogs are available on the products listed below and a general 20 page bulletin "Jones Drives for Industry" presents a broad picture of Jones products, engineering services and manufacturing facilities.

**W. A. JONES FOUNDRY & MACHINE CO.**

4401 Roosevelt Road, Chicago 24, Illinois

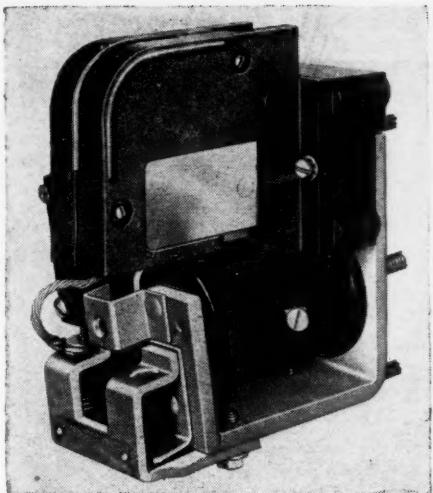
JUST ASK FOR BULLETIN NO. 80 →

• These illustrations show application of Jones drives to solve a wide range of industrial power transmission problems.

# Jones

HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • CUT AND MOLDED TOOTH GEARS • PULLEYS  
ANTI-FRICTION PILLOW BLOCKS • V-BELT SHEAVES • FRICTION CLUTCHES • TRANSMISSION APPLIANCES





terrupted do not exceed 250 volts. The deep frame contactors provide greater winding space for the operating coil and are suitable for voltages up to 600. Operating coils are rated for continuous duty and will operate the contactors at 80 to 110 percent of their rated voltage. Contacts are insulated for a maximum difference of 600 volts among parts.

### Non-Corrosive Pipe

Endowing the inside of steel pipe with the corrosion resistance of nickel while retaining the strength, fabricating characteristics and low cost of steel has now been achieved, states the Bart Mfg. Co. Inc., Belleville, N. J. This nickel-plated steel pipe, first used extensively for secret war purposes, is made by the "Bart Lectro-Clad Process," permitting electroplating the inside of steel pipe with nickel or other metals. Declared to be commercially practical in every respect, the process develops a smooth, ductile and pore-free nickel deposit. It is fully adherent to the base metal and applicable to pipe or tubing up to 18 in. over-all diameter and random lengths to about 20 ft. Fittings and accessories are available for complete piping systems.

Welding and fabricating techniques, it is further stated, are completely developed. The internally plated pipe may be welded, reduced and bent (hot or cold) without destroying any portion of the lining. In the cold reduction method for reducing tubing it is now possible to predetermine actual thickness of plating throughout the entire reduction because the applied and base metal reduce in equal ratio. It is expected that the low cost of this method will extend use of corrosion-resistant pipe to many new applications.

### Roofing Metal

"Plastipitch," protected metal for roofing and siding on industrial buildings, is a new product for postwar building that has been developed by Koppers Co., Inc., Tar and Chemical Division, Pittsburgh, Pa. The product consists of flat, corrugated or V-crimp steel sheets the surfaces and edges of which have been treated with Plastipitch, a compound that Koppers has perfected.

It is said to provide permanent adherence

**DEPENDABLE PERFORMANCE *Always***  
**Standard and Special Mine Track Work.**  
**WEIR KILBY**

For more than sixty years Weir Kilby has been manufacturing good quality trackwork for Railways, Mines, and Industrial plants. As rolling stock and other apparatus have become heavier we have improved and strengthened our product to meet these new service demands. Our many customers are pleased with our good deliveries, reasonable prices and superior product. We will be glad to work with you. Many items, such as TITAN Frogs, Switches, Switch Stands, etc., can be shipped from stock. Others will be made up promptly.



CATALOG "H" comprises 154 pages of helpful data, replete with photos, drawings and specifications, covers every track work need. A request on your letterhead will bring your copy promptly.

**Suppliers to Mines and Railroads Since 1882**

### WEIR KILBY CORPORATION

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### FLEXIPIPE

The improved flexible tubing for  
mine and tunnel ventilation

This flexible air tubing is ready for immediate, easy installation. On account of its flexibility, it can be put up or taken down in a fractional part of the time required by a more rigid means of face ventilation.

Write for free sample and full information.

### BEMIS BRO. BAG CO.

412 Poplar Street, St. Louis 2, Mo.

### MORE HAULAGE FOR 20% LESS BATTERY CAPACITY

Oil-tight, non-leak transmission. Use regular auto oil; change every 6 months.

Strong, Simple, Low maintenance cost.



Extra-long journal springs assure better trackability. Large motor, to assure more horsepower per ton weight of locomotive. Can be equipped with hydraulic brake.

### GREENSBURG "RANGER"

This locomotive being used for main line haulage at the Blacksmith Coal Company, Novinger, Missouri. This is a 4½ ton locomotive, operating on 30" gauge track. This locomotive built from 3½ to 10 tons — either single or double motor-drive — 16" to 56½" track gauge. Also factory rebuilt storage battery locomotives with new locomotive guarantee.

All Greensburg Locomotives are CUSTOM-BUILT to your requirements

THE GREENSBURG MACHINE CO. 101 STANTON ST. GREENSBURG, PA.



THIS fellow, like so many others who do the blasting, has plenty of SEAL-TITE Tamping Bags filled, stored, and ready for action. The reason why is simple indeed: the SEAL-TITE won't split or break open as a result of moisture when stored. Therefore, safe "dummies" are always and quickly available. AND, they are properly packed.

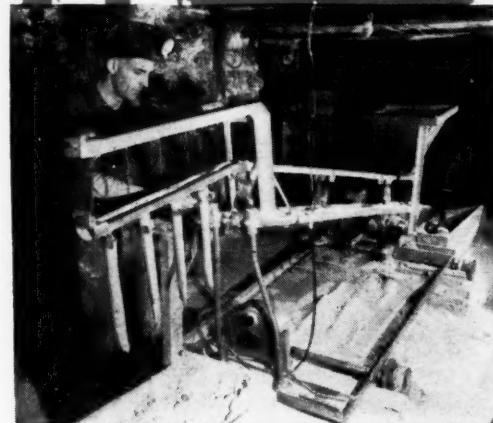
**THERE'S SAFETY TOO!** The seams are sealed for greater strength and safety. Less explosives are used—you avoid the shattering, heavy blasts which endanger mine roof and working structures.

**REDUCE NUMBER OF CHARGES!** The safe, solid stemming which is possible increases the effectiveness of every charge.

**FULL PROPER TAMPING!** The variety of sizes and the dependability of SEAL-TITE make full, efficient stemming possible.

**YOU SAVE MONEY!** With all of the benefits and advantages of SEAL-TITE it is only natural that money is saved in time, effort and materials.

SEAL-TITE Safety Tamping Bags come in 17 different stock sizes. Special sizes made to order.



#### Ask about "The Dummy Maker" machine for use with SEAL-TITE Tamping Bags

Relieves worry . . . assures better, safer working conditions . . . convenient . . . dependable . . . inexpensive . . . furnishes an ever-ready supply of safe, properly filled Dummies . . . fills and packs 400 to 600 bags per hour . . . uses clay, rock dust, or sand . . . requires only one or two unskilled operators . . . operates on  $\frac{1}{4}$  h.p. motor from trolley circuit . . . mounted on trucks for portability . . . pays for itself in a short time.

Why not investigate today? Write to us and get all the details. Once you use SEAL-TITE Safety Seam Tamping Bags you'll see why so many operators prefer them and depend on them for best results. They can be supplied in any width—any desired length or weight of paper.

## THE TAMPING BAG COMPANY

MOUNT VERNON  
ILLINOIS



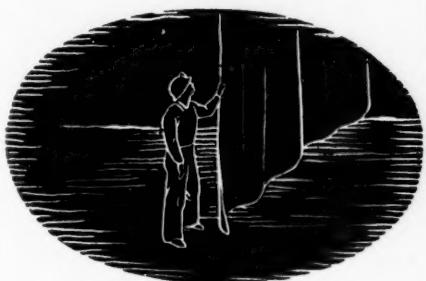
You can't go very far on tires that need air—in fact it's costly—they've got to have air to stay in good condition and deliver the very best of service.

## ABC JUTE BRATTICE CLOTH

The same goes for your men too—they need good air to produce the most. ABC Cloth is woven from heavy yarns and is skillfully and uniformly loomed throughout. Our research department has conducted many tests in the use of chemicals in treating the cloth to insure the very utmost in protection against the various forces that destroy ordinary types of cloths.

If yours is a very wet mine, you'll have no shrinkage troubles. If fungi prevails, ABC Cloth will resist infection. It too will resist flame. You are assured well ventilated working places because you'll have no leaks in the cloth.

Write for complete details.



**AMERICAN  
BRATTICE CLOTH CORP.  
WARSAW - INDIANA**

to metal at low as well as high atmospheric temperatures and thoroughly protect the base from rusting, corrosion, salt air and the effects of chemical fumes present in many areas. After the Plastipitch coating the sheets are provided with additional surfaces to give added protection. Besides roofing and siding, the material is suitable for gutters, ventilators, flashings, ducts, etc. The sheets, it is said, can be easily fabricated without special equipment and can be bent without impairing the coating because of its toughness and elasticity.

## Industrial Notes

E. I. DU PONT DE NEMOURS & Co., Inc., Wilmington, Del., announce the retirement of C. A. Woodbury, manager of the technical division, and I. J. Cox, manager of the American Glycerin Section and production manager of the Black Powder Section, explosives department. Mr. Woodbury will be succeeded by Dr. B. H. Mackey and the duties of Mr. Cox in the American Glycerin Section will be taken over by G. H. Loving, an assistant director of sales of the Explosives Department, and those in the Black Powder Section will be taken over by H. K. Babbitt, production manager of the Special Products Section. P. C. Kaiser has retired as manager of the Repauno Works and J. W. Kitts, production manager, Military Explosives Division, has been named as his successor.

UNITED STATES STEEL SUPPLY Co., subsidiary of United States Steel Corp., has acquired a nine-acre industrial tract on Bessemer Ave., southeast Cleveland, where it will construct new steel warehousing buildings that will more than double existing facilities that are to be abandoned upon completion of the new development. The new plant is to be ready by the 1946 year-end.

VULCAN IRON WORKS, Wilkes-Barre, Pa., has elected as president and general manager Benjamin S. Dowd, formerly executive vice president. Promotions announced by Mr. Dowd include the appointments of J. F. O'Brien as director of purchases; George W. Walter as works manager; Joseph Lehnert as production manager, and C. A. Netter in charge of planning.

AMERICAN CAR & FOUNDRY Co. has elected as vice presidents to assist R. A. Williams, vice president in charge of sales, W. Lyle Richeson, Frederick H. Norton and Philip A. Hollar.

MACK MFG. CORP. has elected M. W. Walworth as vice president and chief engineer with general offices in the Empire State Building, New York City. He joined Mack in 1939 after twelve years in the engineering department of Reo Motors, Inc.

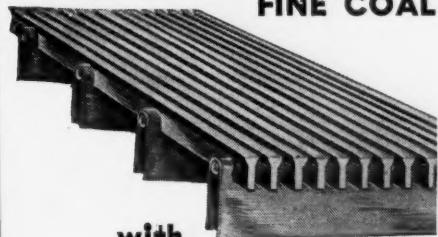
UPSON-WALTON Co., Cleveland, celebrated its 75th anniversary Feb. 1 by formulating plans for the greatest period of achievement in its history. It manufactures wire rope, tackle blocks, boat fittings, accessories and brattice cloth.

GENERAL ELECTRIC Co., industrial haulage division, Schenectady, N. Y., has appointed J. W. Brauns as manager. His

**INCREASE  
PRODUCTION  
LOWER  
MAINTENANCE**

## SIZING and DEWATERING

**FINE COAL**



with

**The Profile-Bar**

## WEDGE-BAR SCREEN

with

## Continuous Slot Openings Enlarging Downward

WEDGE-BAR means continuous slots. No cross wires, loops or non-perforated areas. Downward enlarging slots draw moisture and undersize from screen surface. U-Holder supports mean maximum carrying capacity and rigidity, minimum weight.

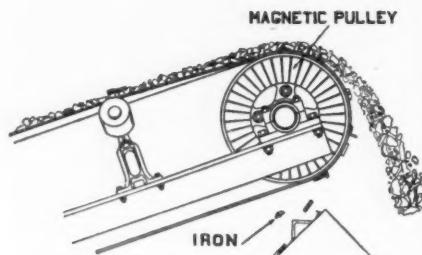
WEDGE - BAR Sections are specially designed and fabricated to do your job and fit your equipment for the most efficient screen performance and longest life. Our data sheets are available for your convenience in supplying data we need to make our recommendations — without obligation on your part. Write us.

**Shaker Jackets • Vibrating Screen  
Panels • Chutes • Conveyors • Dryers**

**WEDGE-BAR SCREEN CO.**

640 W. 134 St., New York 31, N. Y.

# FOUND A No-Cost Way to Ship Stoker Coal Iron-Free From the Mine!



Most operators recognize the desirability of shipping stoker coal without any iron in it. We always thought it was worth spending money to do it and sold Dings Magnetic Separators on that basis. Needless to say, we were not the least surprised to find that one of our good customers was making a direct profit on his Dings Pulley.

Here are the records based on data from C. B. Scholl, Chief Engineer, Boone County Coal Corp., Sharples, W. Va.:

**Based on depreciating the Dings Pulley in 10 years (most Dings Pulleys last for 25 to 40 years) the annual costs for the first 10 years were \$154.10 for depreciation and \$85.54 for electricity, no maintenance or repairs. This totals \$239.64, but the pulley recovered tramp iron that was sold as scrap for \$243.00, netting \$3.36 per year direct profit. The next 10 years should be "lulus."**

It pays to buy the best in magnetic separators. Write to Dings for literature.

## Dings Magnetic Separator Co.

506 East Smith Street, Milwaukee 7, Wis.



main responsibility is the sale, application, and servicing of locomotives for use in industrial work, including diesel-electric and electric mine locomotives, as well as electric equipment for these locomotives. He succeeds F. H. Craton, who is now assistant manager of the transportation divisions.

LIMA LOCOMOTIVE WORKS, INC., Shovel and Crane Division, Lima, Ohio, has appointed Edward E. Worrell as assistant district manager of the central district. He joined the Lima organization through its subsidiary predecessor, the Ohio Power Shovel Co., in 1929.

ATHHEY PRODUCTS CORP., 5631 West 65th St., Chicago 38, has appointed E. T. Tuller as domestic sales manager. He joined the company in 1940 as special representative in the introduction of the force-feed loader to distributors' sales organization.

FAWICK AIRFLEX organization, Cleveland, has appointed as service manager Ernest J. Gottfried, former test engineer with General Motors diesel engine division.

DROTT MFG. CORP. is the new name of the Hi-Way Service Corp., 5141 North 35th St., Milwaukee 9. The company manufactures bulldozers, bullangledozer, bullclam shovels, skid-loaders, Go-Devil tractor cranes, town patrols and Hi-Lift loaders.

JOY MFG. CO., Pittsburgh, Pa., announces that Raymond Mancha has joined it to become, after the contemplated merger of Joy-Sullivan-La-Del combination, vice president in charge of ventilation of the combined unit. He formerly was manager of the ventilation division, Jeffrey Mfg. Co., Columbus, Ohio.

WORRINGTON PUMP & MACHINERY CORP. has transferred James C. Barnaby, consulting engineer, to the general engineering staff at the Harrison (N. J.) works as assistant director of research and development. W. A. Finn, lately released from the U. S. Navy, has been appointed export manager. He succeeds George Cellhorn, who has become general manager for C. E. Halaby, Colombia, South America, one of Worthington's industrial machinery dealers.

JOYCE-GRIDLAND CO., Dayton, Ohio, manufacturer of jacks, has elected as president Huston Brown; chairman of the board, J. M. Switzer, formerly president; vice president and secretary, Kert Hott; vice president and treasurer, Warren Webster. Huston Brown will continue as director of sales. All of the officers have been connected with the company for a number of years.

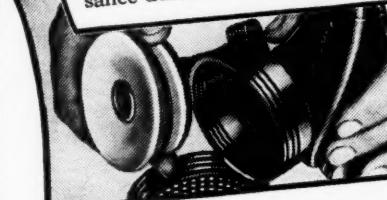
RELIANCE ELECTRIC & ENGINEERING CO., Cleveland, will erect immediately alongside its main plant a new building inclosing an additional 48,000 sq.ft. and representing, with its machinery, equipment and moving, an expenditure of about \$350,000. Fred E. Harrell, general works manager, has been elected a member of the board of directors.

CATERPILLAR TRACTOR CO., Peoria 8, Ill., has promoted three research-projects directors and an assistant engineer to positions as assistant directors of research. Dr. L. A. Blanc will be in charge of physical, chemical, combustion and metallurgical projects; W. L. H. Doyle, supervisor of spe-

## This One Respirator does the job of Four



Yes, workers get 4-way safety with this Willson respirator. Protects lungs against 4 different industrial hazards. Metal fumes. Pneumoconiosis-producing dusts. Toxic dusts. Nuisance dusts.



Two double filters provide extra-large filtering area. Give workers the greater comfort of free-and-easy breathing. Filters are throw-away type. May be easily, inexpensively replaced.



Face piece available in two sizes to fit either small or large face. Both sizes carry Bureau of Mines' approval. Compact, the respirator may readily be worn under a welding helmet.



For help on your lung-protection problems, get in touch with your Willson Distributor or write direct to Dept. CA-12.

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS  
**WILLSON**  
DOUBLE  
PRODUCTS INCORPORATED  
READING, PA., U.S.A. Established 1870

# Companions in FASTER COAL-CUTTING

## KENNAMETAL UNDERCUTTER BITS

The efficiency of every machine—and man—in your mine depends upon the small edge of the undercutter bit. For, before coal can be drilled, blasted, loaded, and transported, it must be cut.

**Faster**—Tough, hard Kennametal tips cut through normal face with less power; slice across more places before becoming dull.

**Better**—Less "bug-dust"; cleaner cutting close to bottom; harder cutting jobs made easy.

**Cheaper**—Exceptionally long life; idle machine time minimized; skilled men do more productive coal cutting, less unproductive bit changing.

*Here's a typical performance report: With steel bits it took 2 hours to cut across 22 foot place in sulphur-streaked coal—three bit changes. Kennametal did same job in 15 minutes—no bit changes.*

Kennametal Undercutter Bits are available  
for most standard chains.

## KENNAMETAL DRILL BITS

Distinctive two-way drill bits also have brazed-in Kennametal tips, with cutting edges contoured for fast, uninterrupted drilling to accurate size throughout bit life, including many regrinds. Six sizes available, ranging from  $1\frac{1}{8}$ " to 3", for hand-held, and track or post-mounted machines.

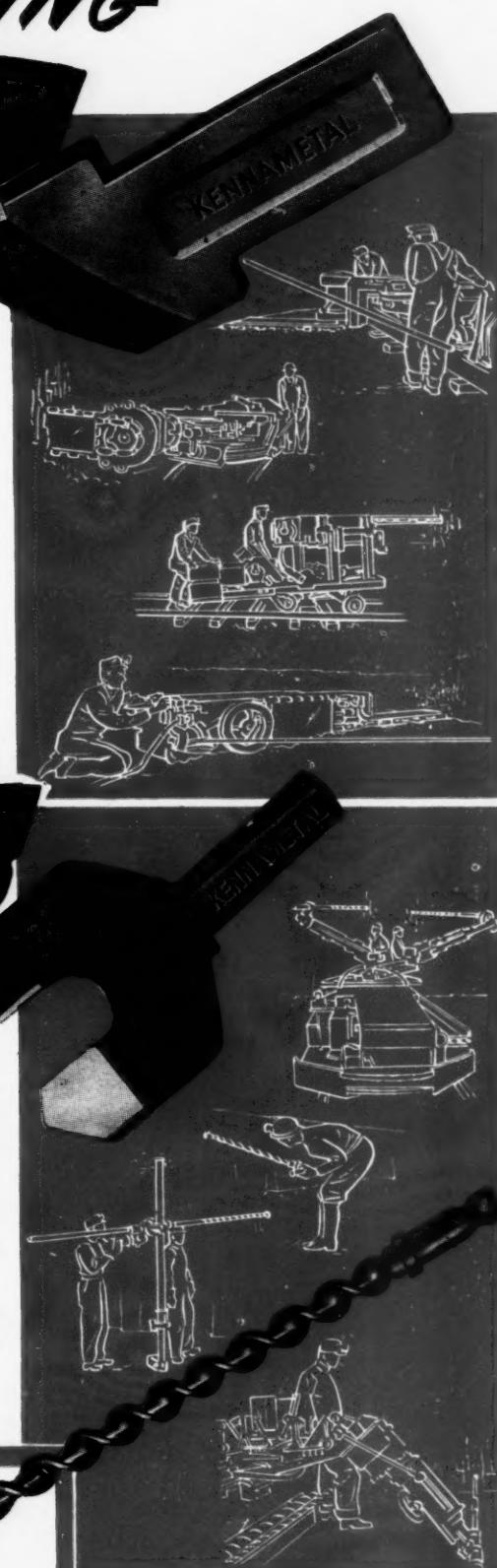
Augers are also made by Kennametal. Solid-center, heat-treated rolled steel shapes, to minimize whip. Double spiral for efficient hole cleaning. Driving shanks shaped for quick "twist of wrist" change.

*These are representative results: One Kennametal bit drilled 275 feet of blast hole in bottom rock; another 850 feet in coal—before resharpening was necessary.*

### AND FOR MORE EFFICIENT STRIPPING

Kennametal Inc. produces four sizes of three-way drill bits— $3\frac{1}{8}$ ", 4", 5", and  $6\frac{1}{8}$ ", having cutting tips of Kennametal. They are speeding drilling operations in major stripping pits. One operator reports, " $6\frac{1}{8}$ " Kennametal Bit drilled 900 feet, and wasn't dull enough to need resharpening". Another states, "A Kennametal Bit, used for a month, is still cutting faster than any other type bit we ever used."

Catalog M-1—giving specifications and prices of Kennametal Bits and Augers—will be sent promptly, upon request.



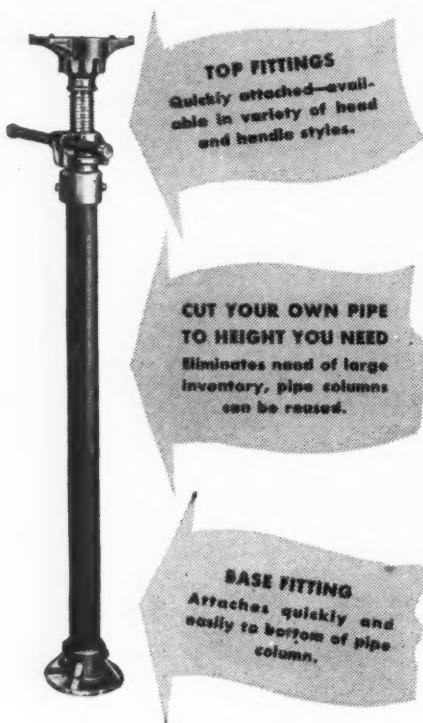
**KENNAMETAL**

SUPERIOR CEMENTED CARBIDES

KENNAMETAL INC., LATROBE, PA.

# DUFF-NORTON MINE ROOF JACK FITTINGS

New, Economical Type  
Tailor-Made to Meet  
YOUR Needs



Make your own adjustable roof jacks by attaching Duff-Norton Fittings to standard pipe cut to the length you need for your operations. You thus eliminate the need for large inventories of roof jacks, reduce costs, assure a dependable stock of roof jacks for all lengths required. Pipe columns and fittings can be used over and over.

Write for details on these cost-cutting Fittings and on the Standard Type Duff-Norton Mine Roof Jack.

THE DUFF-NORTON  
MANUFACTURING CO.  
PITTSBURGH, PA.

Canadian Plant: COATICOOK, QUE. There is a Distributor Near You

cial investigations and general research projects, including liaison with cooperative and national research activities; C. R. Maxwell, in charge of diesel-engine, combustion-system and fuel-injection development projects; and C. R. Schad, in charge of duties of organization, personnel and operational activities. J. M. Davies, assistant to C. G. A. Rosen, director of research, will assume added responsibilities, including tractor, earth-moving, special products and current product revision projects as well as all field activities.

WRIGHT FILE CO., Lisbon, Ohio, owned and operated by two brothers, William and Charles Wright, is expanding its activities, the outcome being the Lisbon Hoist & Crane Co. It is expected to be in full operation soon with a complete line of electricable hoists.

ELECTRIC STORAGE BATTERY CO., Philadelphia, Pa., has appointed as manager of its newly consolidated railway and engineering sales division K. W. Green, formerly manager of the railway sales division. During the last four years he has been supervising the engineering sales division in addition to his duties as head of the railway division.

ALLIS-CHALMERS MFG. CO., Milwaukee, has promoted Claiborne C. Van Zandt to assistant manager of the crushing, cement and mining section of the basic industries department. Fred W. Bush has been promoted from assistant to the manager to assistant manager of the electrical department. Frederick C. Ludington has been appointed as manager of the switchgear and control sections, of which he has been acting manager since the resignation last July of W. S. Edsall. A. J. Jorgensen has been promoted from engineer-in-charge to chief mechanical engineer of the crushing, cement and mining section. R. R. Rockafeld has been named engineer-in-charge to succeed Jorgensen. A. J. Roubal succeeds Rockafeld as chief draftsman in the crushing, cement and mining section. Charles N. Karr has been appointed as sales promotion manager of the tractor division, vice E. L. Aikins, recently placed in charge of the tractor division's Seattle (Wash.) office. Melvin C. Shaw has been named manager of the blower and compressor department, vice John Avery, resigned. Henry W. Erickson, mining engineer, has been transferred from the firm's Washington office to its New York office.

UNION WIRE ROPE CORP., Kansas City, Mo., announces that Ray G. Noble has returned to his old duties as advertising manager after three years' service with the U. S. Army. He had been with the corporation five years before his entrance into armed service.

SUN OIL CO., Philadelphia, Pa., has appointed Frank R. Markley as general sales manager. He formerly was manager of the industrial products department. Maximilian H. Leister has been named as general manager of the motor products department. Ray H. Anders has been appointed to succeed Mr. Markley as manager of the industrial products department.

AMERICAN BRAKE SHOE CO., New York,

## ST. LOUIS SNAPSHOTS

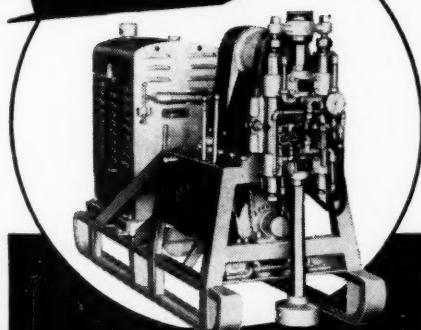


HE CAN RELAX...

HE HAS A  
RESERVATION  
AT THE HOTEL

**Mayfair**  
EIGHTH AND ST. CHARLES

Diamond  
Core  
Drilling  
CONTRACTORS

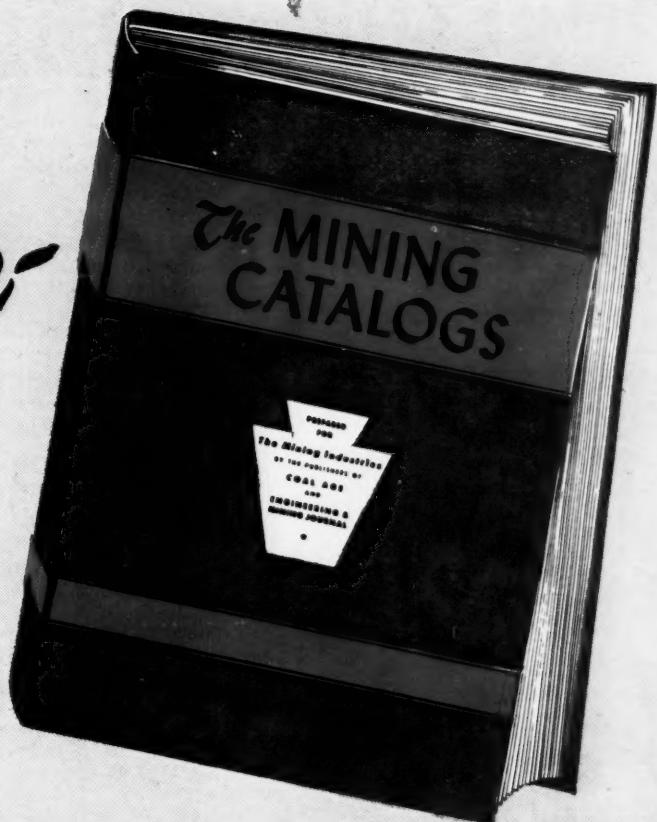
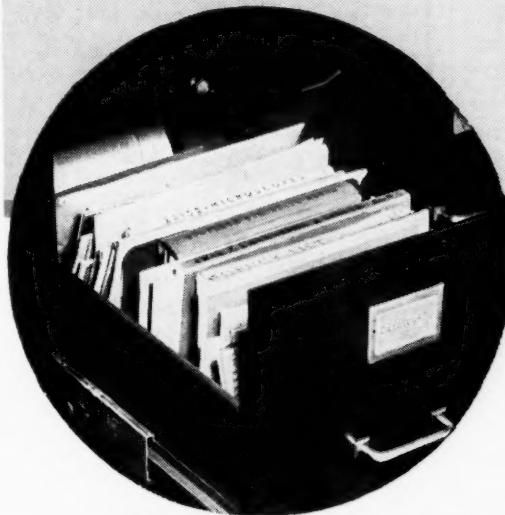


Testing mineral properties  
with our light gasoline drills.  
SATISFACTORY COAL CORES  
GUARANTEED. Ground solidification  
by our pre-pressure grouting method for shafts.  
We mine areas, horizontal holes for drainage. Electric  
drills for inside mine drilling.

**MOTT CORE DRILLING CO.**  
HUNTINGTON • WEST VIRGINIA

*One  
Complete  
Book-*

**OR A JUMBLE OF  
CATALOGS IN FILE**



**TO HELP YOU SPECIFY AND  
BUY MINING EQUIPMENT  
AND SUPPLIES**

**I**NE ORGANIZED SOURCE of information... the only consolidated catalog of products used in the great mining industries... or

Dozens... maybe a hundred or two individual manufacturers' catalogs of all sizes and shapes to search. There's your choice for the information you need when you are getting ready to specify or buy equipment for your company. The MINING CATALOGS makes that job easier.

Here in one book are specifications, performance data and full information on their lines, supplied by leading manufacturers. Classified and in easy-to-read form, you find this helpful information in a fraction of the time required to hunt through the file for individual catalogs. If specifying and buying are your responsibility, and you have not reserved a copy of the 1945-1946 MINING CATALOGS, send the coupon.

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A McGRAW-HILL PUBLICATION  
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THE MINING CATALOGS, 330 West 42nd St., New York 18, N. Y.  
Gentlemen: I am responsible for specifying and requisitioning equipment and supplies needed at our property and do not have access to THE MINING CATALOGS. Please reserve a copy of the 1945-1946 edition for me. (If my country imposes a duty on such Catalog books, I agree to pay same).

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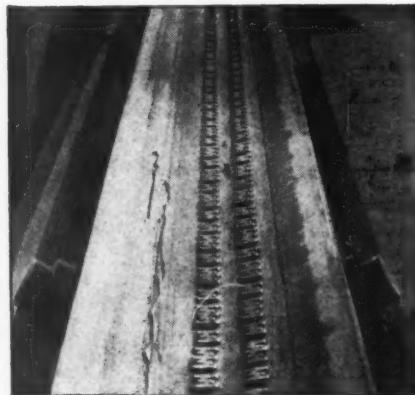
Company Name.....

Company Address..... State.....

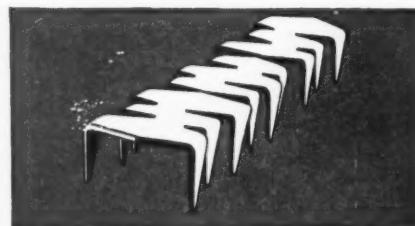
The nature of our operation is.....

# CONVEYOR BELTS

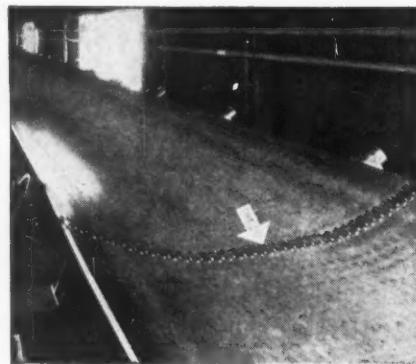
**fastened or repaired  
ON THE JOB  
in a few minutes**



**All you need are hammer,  
block of wood and . . .**



## BRISTOL'S BELT LACING



**For rubber or woven conveyor  
belts up to  $1\frac{3}{16}$ " thick.**

**Write for Bulletin 736.**

**THE BRISTOL COMPANY**

Mill Supply Division  
139 Bristol Road, Waterbury 91, Conn.  
DISTRIBUTORS EVERYWHERE

has purchased Joliette Steel, Ltd., one of the largest producers of manganese and steel castings in Canada. The company will be operated by the present management, working under the direction of Brake Shoe's American Manganese Steel Division. Joseph B. Terbell will head the company and J. L. Mullin will be a vice president. Brake Shoe has planned an expansion and mechanization program for Joliette. Production will be increased and a wider range of alloy steel products produced.

HANNA STOKER Co., Cincinnati, has named as vice president Col. Walter M. English, Lafayette, Ind., who, before his Army service, was superintendent of motive power of the Monon R.R. for many years.

DOW CHEMICAL Co., Midland, Mich., has announced a projected expansion of its plastic production facilities. New construction is in progress already; the remainder of the facilities will be added over the next five years.

TEMPLETON, KENLY & Co., Chicago, announces that Eugene T. Scott has joined the company as product application engineer following his release from the Naval Air Force.

WESTINGHOUSE ELECTRIC & MFG. Co. has appointed D. J. Moschart as engineering manager of its stoker department, in Philadelphia. He succeeds R. A. Foresman, who had been on extended service several months prior to his retirement.

R. H. SHEPPARD Co., Inc., Hanover, Pa., announces the return of Fred D. Livingston as sales manager after serving in the U.S.N.R.

## Trade Literature

**CONVEYOR BELTS**—B. F. Goodrich Co., Akron, Ohio. New publication, "Guide to the Selection of Conveyor Belt Grades," discusses differences in various grades; outlines the reliable measurements of qualities in various type belts and the service for which they commonly are applied. Description and data, as well as the ordinary uses for each of its conveyor belt grades, together with those for special constructions also are contained in the guide.

**SLURRY PUMP**—Oliver United Filters, Inc., 33 West 42d St., New York 18. Bulletin 309 describes the Oliver diaphragm slurry pump, designed to operate without mechanical linkage for transmitting force to the diaphragm. A timed impulse transmits power uniformly, it is said, through an imperforated flexible rubber diaphragm to the slurry or solution being handled. The source of the power is compressed air or vacuum or a combination of both, controlled by a single strong 3-way automatically operated solenoid valve.

**STEEL SHAFT DATA**—De Laval Steam Turbine Co., Trenton, N. J. Bulletin WG-545 contains useful data for determining stresses, torques, bending moments and deflections in steel shafts—round, square, hollow, keyway or stepped.

**PIPE**—Naylor Pipe Co., 1230 East 92d

## ATTENTION MINE OPERATORS!

*If you have rats or mice, and want to be rid of them without the worry that the use of poison involves, send your order at once.*

We have prepared a bait that contains red squill, a drug from the Mediterranean which is harmless to humans, cats, or dogs, but has the special qualities that mean **DEATH TO THESE RODENTS**.

Our R. C. Baits, baked in cookie form, are readily eaten by rats and mice, and have been used successfully with great satisfaction. All you do is scatter our R.C. Baits in infested areas.

No. A 1501—100 baits—\$4.00  
No. A 1502—250 baits—7.50  
No. A 1503—500 baits—12.50  
No. A 1504—1000 baits—20.00

"It's worth the price because it does the work without danger to human life."

*Your check, or purchase order, will assure you prompt delivery. We pay all shipping charges except on C.O.D. orders.*

**RODENT CONTROL CO.**  
220 Broadway, New York 7, N. Y.

**MERRICK  
WEIGHTOMETER**

While material is smoothly moving along a conveyor, the MERRICK WEIGHTOMETER keeps a continuous and accurate record of weights. Total weight is available at a glance.

Applied to any size belt conveyor, either horizontal or inclined. The weightometer gives a simplified and dependable record of your production, without interrupting the flow of coal.

*Write for Bulletin 375*

**MERRICK  
SCALE  
MFG. CO.**  
PASSEIC,  
N. J.

# INDUSTRIAL RUBBER GOODS

A year of remarkable history has just passed, in which the normal routine way of living for most every individual in many countries of the world, was disturbed. Citizens everywhere were devoting their energies to war... to destroy, instead of to build.

## ... AND NOW IT IS PRODUCTION FOR PEACE



### INDUSTRIAL RUBBER PRODUCTS that Quaker is making NOW for civilian use

(PARTIAL LIST ONLY)

Transmission Belting  
Agricultural Belting  
Conveyor Belting  
Elevator Belting  
Air Drill Hose  
Chemical Hose  
Creamery Hose  
Fire Hose  
Fuel Oil Hose  
Garden Hose  
Gasoline Hose  
Tank Car and Tank Truck Hose  
Sand Blast Hose  
Spray Hose  
Steam Hose  
Suction Hose  
Oil Suction and Discharge Hose  
Water Hose  
Road Contractors' Hose  
Welding Hose  
Tubing  
Rod Packings  
Sheet Packings  
Gaskets  
Washers  
Pump Valves  
Moulded Articles

This year is a fresh inspiration to guide us in peacetime endeavors. Quaker had no reconversion problem. The products of Industrial Rubber Goods which we manufacture are very similar, whether used for war industries or for peace industries. The paper work on cancellations of Government orders is just about completed. Full scale production on civilian orders started August 17 and has been going on steadily ever since.

Naturally we are making headway on our Backlog of orders. It still will be several months before critical raw materials will be available in quantities wanted. But we are making better deliveries on many items, especially on Fire Hose, Mill Hose and in Wrapped Construction Hose in sizes 3" and larger.

Our suggestion to the keen buyers, with an eye on the future, is to place their orders well in advance of requirements. This will insure getting your merchandise when desired.

Anticipate your needs on Industrial Rubber Products and send your orders to Quaker NOW.

"If there is a way to get it done—Quaker will do it"

## QUAKER RUBBER CORPORATION

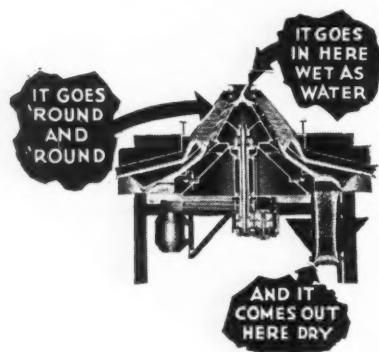
PHILADELPHIA 24, PA.

NEW YORK 7 • CLEVELAND 15 • CHICAGO 16 • HOUSTON 1

Western Territory: QUAKER PACIFIC RUBBER COMPANY  
SAN FRANCISCO 5 • LOS ANGELES 21



FOR the most economical and simple method for dewatering and drying the smaller coal sizes. The many installations in modern coal washing plants are proof of this. We shall be glad to give you the details of the installations.



Sludge and slurry coals are also being reclaimed by using this machine. Where a large part of the ash is in the finest sizes, ash content as well as the water content is reduced.

Centrifugal and



Mechanical Industries,  
INC.

3600 South Second Street  
St. Louis 18, Mo.

St., Chicago 19. Catalog 44 features applications of lightweight pipe in diameters from 4 to 30 in. Illustrated are installations showing the application of Naylor Lockseam Spiralweld pipe in the many fields in which lightweight pipe is used to advantage. Along with data on pipe structure are sections on precision fabrication and pipe connections including an entirely new type of coupling that saves time and labor for users.

DIAPHRAGM PUMPS—Marlow Pumps, Ridgewood, N. J. Bulletin M45 describes Marlow "Mud Hogs," power-driven diaphragm and plunger pumps for general use. Available in 3- and 4-in. single and 4-in. double sizes, with capacities ranging from 3,000 to 9,000 gal. per hour, they are said to have the following features: non-clogging ball valves, quickly accessible valve chambers, renewable valve seats, powerful steel walking beams that are virtually indestructible, double bushings, long-life diaphragms, clamping rings that permit diaphragms to be replaced in 6 to 8 minutes, oversized pump bodies, extra heavy gearing, and heavy-duty construction throughout.

POWER DUCKBILL—Goodman Mfg. Co., Chicago 9. Bulletin CC-452 covers the Type 277 power duckbill, which, it is said, will practically eliminate all hand work at the face, as it will swing from rib to rib under its own power, pull itself forward to facilitate the adding of troughs under its own power, and will pick up the coal and transport it to the room neck on power supplied by the drive—also located near the room neck.

ROCK LOADER—Goodman Mfg. Co., Chicago 9. Bulletin CL-451 describes the Type 125 Conway shovel, a tough little machine combining liberal loading range, efficient clean-up and powerful digging action.

CRANE—R. G. LeTourneau, Inc., Peoria, Ill. Folder Form C-633 describes various on-or off-the-road uses of the Tournacrane, showing its wide range of industrial adaptability. On-the-job illustrations are presented of various Tournacrane applications—ranging from oil-storage-tank installation to culvert placing. In addition, a handy chart showing lifting capacities at various reaches is included.

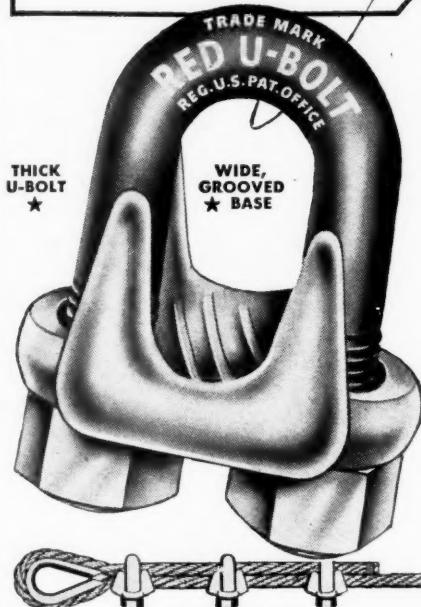
SHOVELS-CRANES-DRAGLINES—Link-Belt Speeder Corp., Chicago and Cedar Rapids. Catalog 2098 covers line of 1½- to 2-cu-yd.-capacity shovels-cranes-draglines. Illustrated are many interesting examples of Series 300 machines applied to a wide variety of excavating, steel-erecting and material-handling jobs.

TRAILER—Athey Products Corp., 5631 West 65th St., Chicago 38. Bulletin Form 448 describes the new PD-10 rubber-tired trailer, the companion unit for Caterpillar's DW-10 tractor. The complete story of the new trailer is illustrated with halftones and diagrams; shows design features, applications and specifications.

WELDED FABRICATION—United Welding Co., Middletown, Ohio. Manual entitled "Tailoring in Metal" discusses the factors affecting the choice of welded fabrication and the techniques of welded design. The purpose of this manual is to help engineers

**The CROSBY CLIP has a SOLID GRIP!**

Base fits lay of wire rope—holds firmer and without flattening strands. Available in sizes from  $\frac{1}{8}$ " to 4". Sold everywhere. Manufactured by American Hoist & Derrick Co., St. Paul 1, Minnesota.



QUALITY PACKING



METALLIC & SEMI-METALLIC

**PACKING**

for

**MINE PUMPS**

"The Packing that gets the Repeat Orders"

For deep mine pumps. Resists acid mine waters. Keeps grit out of stuffing box. Three types.

• **MARLO ALL PURPOSE METALLIC PACKING**

Best ever devised. Will not freeze at 70° below, soft, pliant, like fibrous types, yet easier to handle. Won't cut, score or corrode moving parts.

• **"TWIN-TWIST" SEMI-METALLIC PACKING**

Metal strands twisted with asbestos. Anti-frictional. Durable. Economical. Remarkable compressibility. Never hardens. For temperature up to 550° F.

• **"RED WATER" SEMI-METALLIC PACKING**

Most modern development for all hydraulic applications. A solid-packing vegetable fibre combined with metal strands. Retains form under any conditions.

Let us serve you

**THE MARLO COMPANY**

38 HOWARD ST.  
NEW YORK, N. Y., U. S. A.



## *Fifty Years of Wire Rope*

**B**ACK in 1896, wire rope was not the highly specialized product it is today — neither was the equipment on which it was used.

The past 50 years have brought amazing developments in methods and equipment. Huge excavators take 35 cubic yards of earth at a 'bite.' Well drillers go down 15,000 feet into the bowels of the earth in their quest for oil. Huge logs are 'snaked' out of the tall timber like so many match sticks. Elevators supply vertical transpor-

tation in skyscrapers reaching up to the clouds. Man flies in aircraft around-the-world in less time than once required to go a few hundred miles.

Wire rope as a part of this equipment has also changed. Through the years Macwhyte Company has continually kept pace with equipment progress by specializing in the drawing of wire and the making of wire rope and wire rope slings.

We shall continue every effort to merit your wire rope and wire rope sling business.

### **MACWHYTE COMPANY**

Specializing in the manufacture of wire and wire rope, wire rope slings, aircraft cable, assemblies, terminals, and tie rods.

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and designers decide for themselves if fabrication by welding and the materials made available by this method are applicable to the problem. The factors involved in a decision are cost, weight, strength, appearance, stability, noise, quality and delivery. Various types of welds are explained and how they affect static and fatigue load values. Of particular interest to the designer is specific information about devices that can be employed to reduce cost and improve construction.

**MINE CONVEYORS**—Robins Conveyors, Inc., Passaic, N. J. Bulletin 127 gives detailed facts about each part of Robins mine conveyors, telling users why they can expect longer, better, and less costly service from them.

**DIPPER TEETH**—Daniels-Murtaugh Co., 625 C Ave., N. W., Cedar Rapids, Iowa. Bulletin 115 pictures and describes, with complete specifications, all types of DMCO

teeth for dippers and dragline buckets. Featured is the Wear-Sharp penetrator point of forged alloy steel, which is double-keyed to a Weldapter tooth and held by tack welding. These penetrators provide a sharp, thin cutting edge that rapidly penetrates. Also pictured are various applications of Wear Sharp cast-to-shape manganese-steel re-pointers. DMCO nickel-manganese steel welding rods for replacing points and build-up welding are listed with prices.

**DRILL EQUIPMENT**—Jeffrey Mfg. Co., Columbus 16, Ohio. Catalog 789 is devoted to the 56-A drilling machine for fast drilling and properly placed shotholes. It is said that holes can be drilled parallel to and near the top, bottom and ribs, in places as high as 7 ft. and as wide as 30 ft., besides, if necessary, being possible, because of the universal mounting of the drills, to drill in any direction at any place. A-6 post drill and A-7 hand-held drill also are covered.

**STORAGE BATTERIES**—Gould Storage Battery Corp., Depew, N. Y. Catalog 300 features storage batteries for mine shuttle-car service. The adaptability of Kathanode Glassklad construction to shuttle-car service is emphasized and a specially designed corrosion-proof steel tray is described. The method by which Kathanode construction retains active material is discussed and the Kathanode grid is illustrated in detail. Two informative articles, "The Theory of the Lead Acid Battery" and "Care and Maintenance of Your Battery," are included.

**AIR SEPARATOR**—Swartwout Co., 18511 Euclid Ave., Cleveland 12. Bulletin S-13 describes the Airfuge, combination air separator and trap for users of compressed-air tools and operations. It discusses the need for clean, dry air for the protection of pneumatic equipment.

**VIBRATING SCREENS**—Screen Equipment Co., Inc., 9 Lafayette St., Buffalo 13. Bulletin entitled "A Guide to Better Screening" emphasizes that Seco's positive control assures accurate screening, maximum capacity and long-life to screens.

**WIRE ROPE**—Union Wire Rope Corp., Kansas City, Mo. Bulletin No. 1, bearing the title "Rope Dope," is the first of nine bulletins respectively covering: (1) "Replacement of Wire Rope" as to size, tread, diameter and type of construction; (2) a continuation of the first subject with regard to grade of steel; (3) "Lays of Wire Rope," with explanations of regular and Lang lay, right and left lay; (4) "Types of Wire Rope" to aid in ordering with complete specifications; (5) "Factors on Rope Life," which determine the service possible to obtain; (6) "Installation of Wire Rope" and the abuses that should be avoided; (7) "Care of Wire Rope," including instructions for homemade storage and oiling devices; (8) "Abuses of Rope in Use," showing what happens in certain types of installations; (9) "Figuring the Work Load," with explanation on how to figure safety factors and actual stress on rope on given pieces of machinery.

**SAFETY AND RELIEF VALVES**—Farris Engineering Co., 400 Commercial Ave., Palisades Park, N. J. Catalog 45 describes safety and relief valves to match the improved designs of the latest power and process equipment. Pictorial index with line drawings of all the basic Farris valve types enables a valve user to pick out the valve he needs without having to thumb through a whole catalog. Directly opposite the pictorial index is a detailed index showing what the valve can be used for and where to find its specifications in the catalog.

**COMPRESSORS**—Schramm, Inc., West Chester, Pa. Bulletin, "Bores and Strokes," describes\* and pictures Schramm compressors at work under varying conditions.

**HOW TO CUT CAST IRON**—National Cylinder Gas Co., 205 W. Wacker Drive, Chicago 6. Circular N-606 completely covers the "how to" on cutting cast iron with the oxyacetylene flame. Included is discussion of proper types of equipment, preheating conditions, cutting positions, need of adequate protective clothing, proper oxygen and acetylene pressures, etc.

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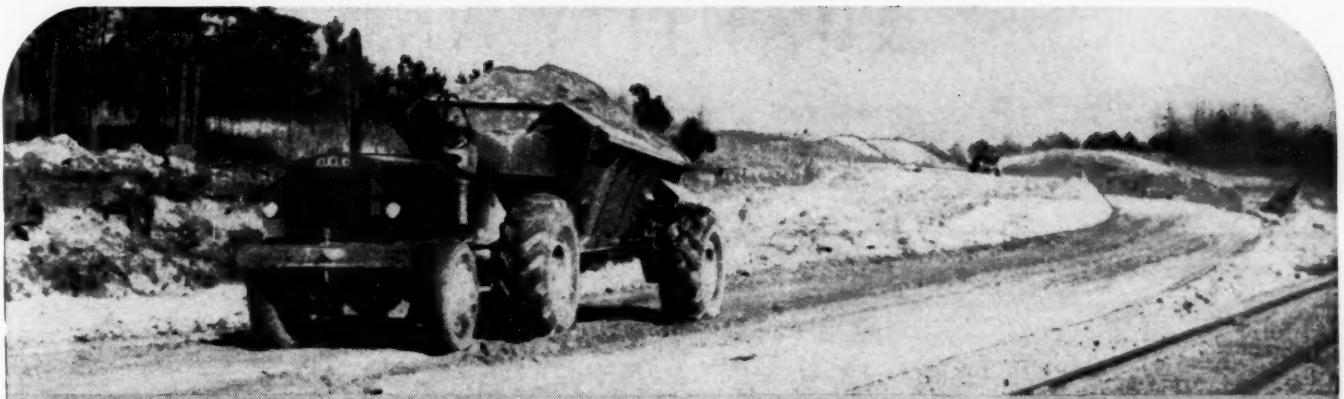
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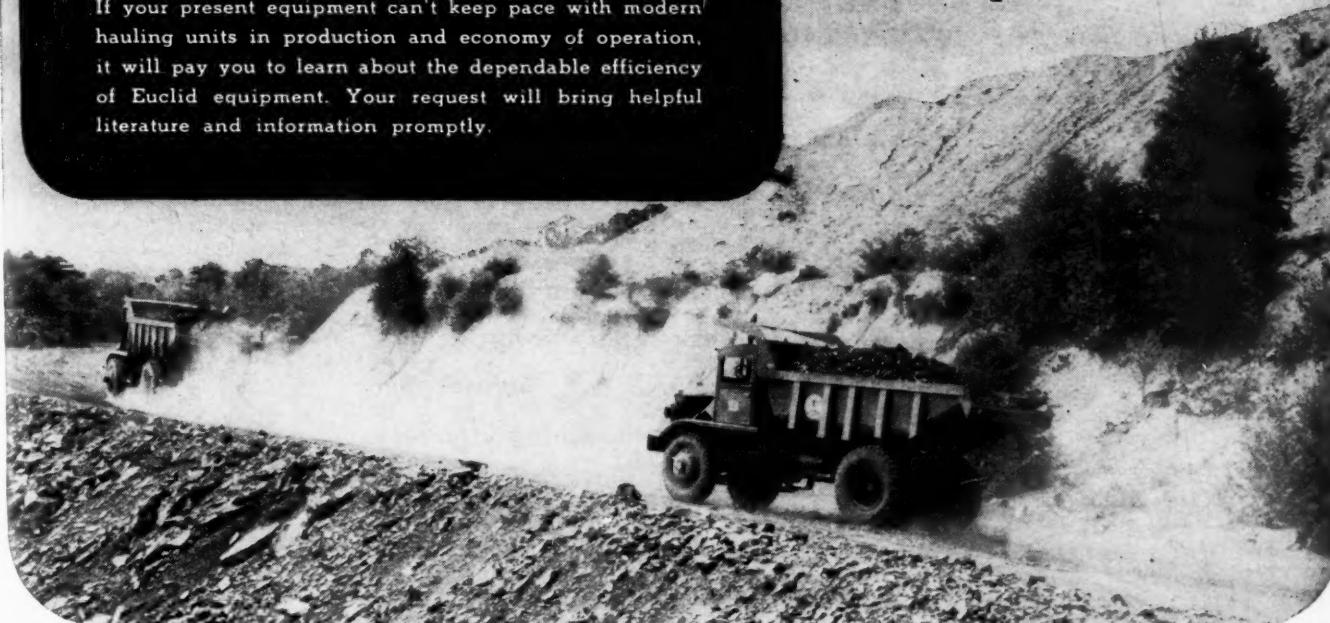
ON

*Short*  
AND  
*Long Hauls*

Most mine, quarry and construction jobs require off-the-highway hauling equipment that can handle both short and long haul work efficiently. If equipment investment and operating costs are to be kept at a minimum, hauling units must be able to do the tough jobs as well as the easy ones.

Rear-Dump and Bottom-Dump EUCLIDS are designed and constructed for just one purpose — to move large loads of earth, rock, coal, ore and other materials on off-the-highway hauls. Their rugged construction, ample power for steep grades and difficult hauls, ease of operation and speed on the haul road are reasons why Euclids move more tons or yards per hour on short or long hauls.

If your present equipment can't keep pace with modern hauling units in production and economy of operation, it will pay you to learn about the dependable efficiency of Euclid equipment. Your request will bring helpful literature and information promptly.



**The EUCLID ROAD MACHINERY Co. . . . Cleveland 17, Ohio**

# Attention Coal Age Readers

COAL AGE FOR MAY WILL REACH  
QUANTITY AND QUALITY

A  
O

READ WHAT PRACTICAL MINE MEN HAD TO SAY,  
WHEN TOLD ABOUT THE MINING EFFICIENCY NUMBER:

"It'll be like hitting the jack-pot of mining experience" says one mine manager.

"Believe me, I'll get plenty out of that issue for my job" predicts a Pennsylvania face-boss.

"Will be most helpful, and all of our staff will read it from cover to cover" says the superintendent of a big Illinois strip mine.

"Should be as good as taking a trip through the winning mines myself to see how they did it", chief engineer.

And the Mining Efficiency Number will have plenty for every mine and preparation plant man from top to bottom. It will be chockfull of facts, figures, diagrams and layouts of the tried and proven methods used by the mines which won Coal-For-Victory awards. How many of these methods will improve your operations? Watch for the Mining Efficiency Number in May.

# H AN ALL-TIME HIGH FOR Y OF MINING "KNOW-HOW"

## MINING EFFICIENCY NUMBER

What are the biggest problems you face in your daily work of getting out coal for the homes and industries of the nation? Are they lower cost, higher efficiency, better quality and greater safety? That's the way COAL AGE editors see them and that's why they are publishing the "Mining Efficiency Number" in May, presenting the mining "know-how" developed by the Coal-For-Victory award winners.

Remember the published lists of 142 winners of awards in 1944 and 1945 — the records those mines established for improved output and efficiency — the public acclaim they won for their above-average help to our war effort?

Already, well over half of these mines have made arrangements for COAL AGE editors to visit them and study how those winning records were made. That study is under way now.

What were the methods they used? What did they do to step up their production so much — to get out so many more tons per man-shift?

COAL AGE believes it would be worth a lot to you in your job to know what these methods were, whether you are a foreman or company president.

So COAL AGE editors are finding out for you. They are going right to these Coal-For-Victory mines, spending weeks of time and travelling thousands of miles right now to get you the facts.

In May, COAL AGE will publish these facts in the Mining Efficiency Number — the most thorough manual of practical mining "know-how" we have ever given to the coal industry.

### EXHAUSTIVE STUDY OF METHODS, EQUIPMENT

Talking with the men behind those mining records, the editors are finding out what methods brought higher efficiency, more coal, higher quality and greater safety.

Exactly what improvement was realized when this new machine was put to work? Figures, not theories or guesses! How did changing the track layout speed up car changing? Down on paper it goes, with the number of minutes saved per shift. Did changing the bits on the cutting machine increase output? Well, what type of bit was it and how much better was it? No detail is too insignificant to go into this record of a job well done.

### CONDENSED, ILLUSTRATED, EASY-TO-READ

When you get the Mining Efficiency Number in May, the whole useful story will be there, but not in long-winded laborious reading. Instead, the results of these weeks of study will be digested, diagrammed, pictured and given to you in concise "working-manual" style.

The important facts will be there — all of them. The ideas, the methods, the figures, the explanations — the whole "know-how" that brought Coal-For-Victory awards to 142 mines and preparation plants.

Ready for you, COAL AGE readers, to apply in your own operations, to cut your costs, improve the quality of your coal, reduce your accident rate.

In May — the Mining Efficiency Number



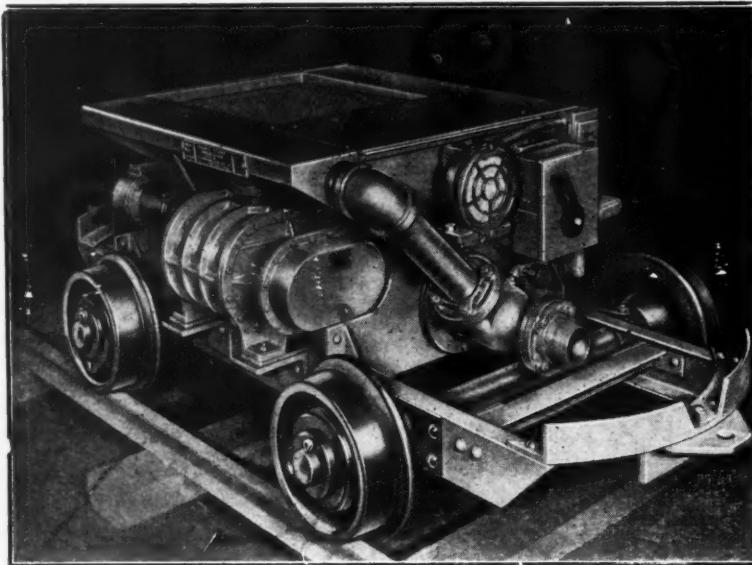
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# ROCK DUSTING IS BETTER THAN INSURANCE

Rock Dusting with DISTRIBATORS Safeguards Lives and Property



## The LITTLE GIANT

A high pressure machine that can be used on entries and in remote areas to a distance of 100 feet. Compactly and rigidly built for hard service. Can be easily transported. Weight 1800 lbs. Overall height above rail 27 inches. Hopper capacity 400 lbs. Distributes 75 pounds of dust per minute.

A REAL BUY  
FOR AVERAGE SIZE MINE

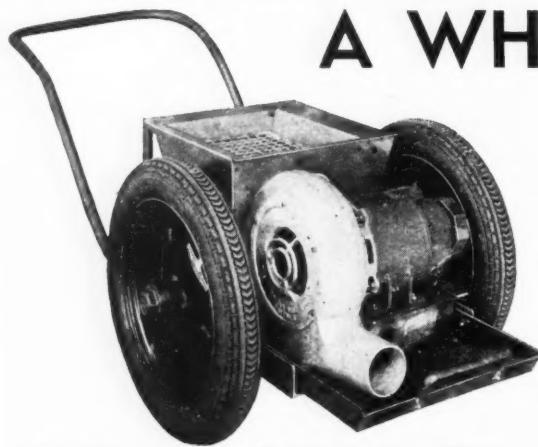
## THE DUSTMASTER—TROUBLE FREE PERFORMANCE

Safety devices on all essential units to protect the equipment and operators.

Greatest distributing capacity. Built as low as 25 inches above rail. Write for particulars.

250 lbs of dust per minute thru short hose  
125 lbs of dust per minute thru 500 feet of hose.

## THE MIGHTY MIDGET—A PORTABLE MACHINE THAT DOES A WHALE OF A JOB



We will demonstrate it at your mine without obligation. SAY WHEN.

Equipped with a short hose nozzle and sufficient trailing cable it can be transported to rooms to dust faces or into remote sections, back areas and air courses. In actual performance it has distributed MORE THAN A TON OF DUST PER HOUR during an entire shift including lost time. It can be dragged on its bottom, transported on belt, in coal car, shuttle car, on low truck (we build), cart (like illustrated) or on the cutter bar of a mining machine.

ONE SHOULD BE IN EVERY MINE WITH OTHER EMERGENCY EQUIPMENT

Send for descriptive catalog of Safety Devices.

THE AMERICAN MINE DOOR COMPANY, 2057 DUEBER AVE., CANTON, OHIO

## LARRY TRAIN Solves Oak Hill Refuse-Disposal Problem

Four-Car Train Wins Over Other Systems in Long-Range Planning for Refuse Disposal—Equipped With Dynamic Braking, Train Operates on a 10-Percent Grade—New Rectifier Installation Supplies the Power

By RALPH R. RICHART  
Assistant Editor, Coal Age

A FOUR-CAR larry train operating on grades up to 10 percent and powered by a 750-kw. 600-volt sealed-tube ignitron rectifier was the solution to the rock-disposal problem at the Oak Hill colliery, Philadelphia & Reading Coal & Iron Co., Minersville, Pa. After the average daily output of the Oak Hill breaker was increased in February from 2,500 to 3,500 tons (due to more coal from the stripings) three Euclid 12-ton trucks were pressed into service to supplement the work of the two old single-unit larry cars, which after years of use were almost ready for the scrap heap. Even more serious than the

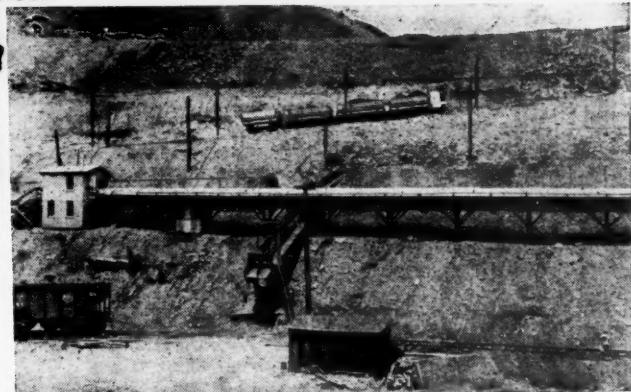
capacity handicap was the fact that the available dumping space at the height the old laries could attain (on a 3-percent incline) was about used up. The problem was to gain altitude for additional dumping space.

The problem was attacked from three angles: (1) a continuation of the 3-percent grade involving the purchase of new equipment; (2) a belt-conveyor system which called for some new equipment and the use of part of the old equipment; and (3) a complete new larry train installation with the attendant power equipment to enable it to negotiate long grades of 10 percent or less.

The first plan considered, that of continuing to dump on a longer 3-percent grade, meant buying 35-year-old cars and one additional 300-

stalled off the real solution to the problem for only \$10,000.

The second plan was to use a belt-

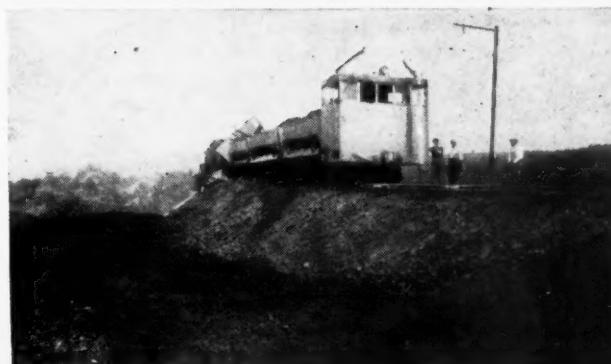
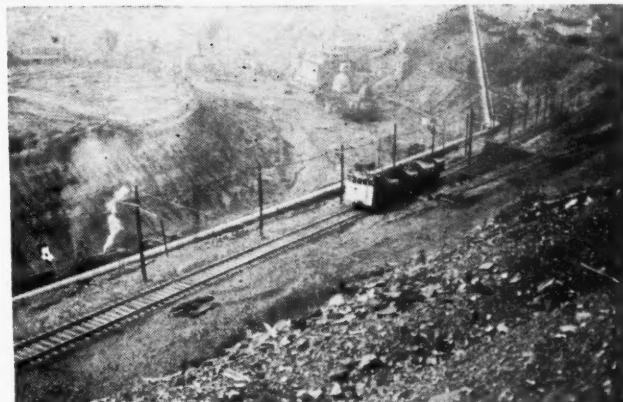


## DIFFERENTIAL

The Differential 4-car larry train illustrated enabled Oak Hill colliery of Philadelphia and Reading Coal & Iron Company to gain additional space for dumping refuse. The ability of this train to handle 90 tons per trip up a 10% grade at 10 m.p.h. solved the disposal problem for the next 20 years—and proved the most economical method.

The first three cars are Differential two-way air dump cars while the fourth car is a three-way air dump type; all of which feature down-folding side doors—clear discharge opening—steep dumping angle—smooth floor and permit building dump with minimum of labor. The end door of the 3-way dump car acts as a bulldozer to aid in maintaining and extending the dump by plowing material into track or over end of the dump.

Consult Differential engineers on your problems of haulage, rock disposal and dump building.



## DIFFERENTIAL STEEL CAR COMPANY

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Builders of Haulage Equipment Since 1915

AIR DUMP CARS  
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MINE CARS  
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MINE LOCOMOTIVES  
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ROCK LARRIES  
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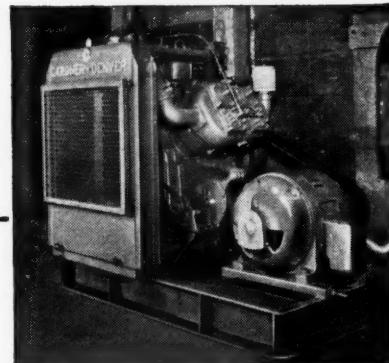
DUMPING DEVICES  
COMPLETE HAULAGE SYSTEMS



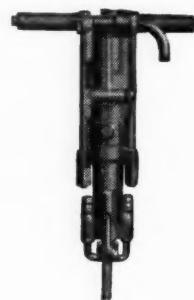
## Harness a Tornado to Boost Tonnage —Cut Costs

**H**arness the power of air! Let Gardner-Denver compressed air mining equipment help you take coal out fast and cheap. Investigate the Gardner-Denver equipment on this page. For complete information, write Gardner-Denver Company, Quincy, Ill.

**GARDNER-DENVER**  
*Since 1859*



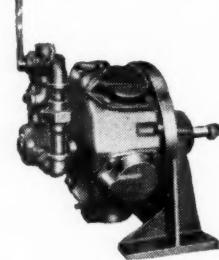
*In Gardner-Denver Water-cooled Vertical Compressors, cylinders are completely water-jacketed to provide efficient service at any altitude and under any climatic condition. Capacities: 42 to 445 cubic feet per minute.*



*There is a rugged Gardner-Denver hand held drill in every weight class to suit every need. Their remarkable hole cleaning ability helps assure a steady drilling pace. Balanced for easier riding.*



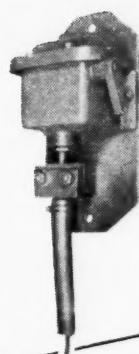
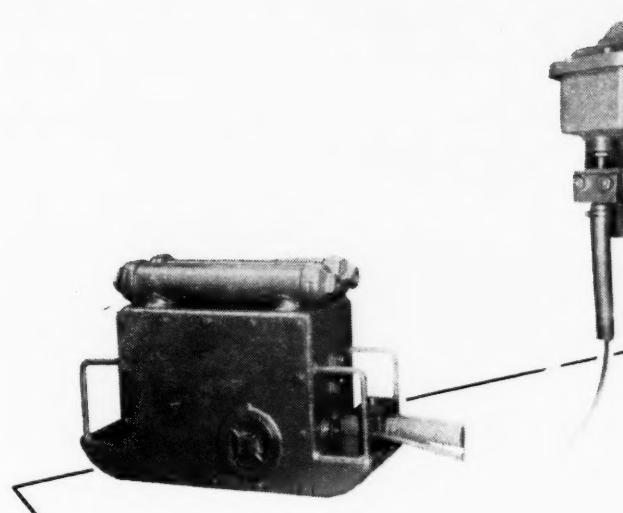
*With Gardner-Denver Continuous Feed Drifting Drills, feed pressure is automatically maintained to suit condition of ground. The design of this drill assures low air consumption—eliminates excessive vibration—reduces maintenance.*



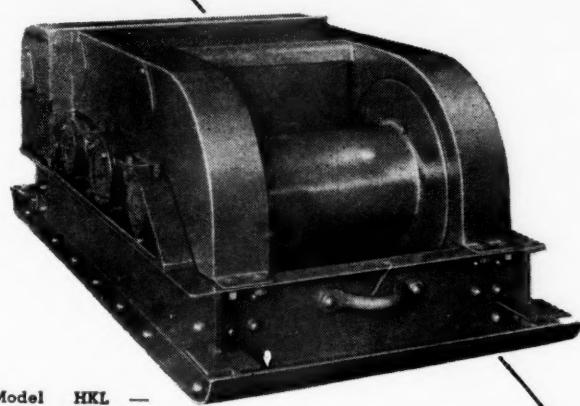
*Gardner-Denver 5-cylinder Radial Air Motors provide a smooth, economical drive for conveying and ventilating systems, winches, pumps and other mining equipment.*



*Gardner-Denver Single Drum Air Hoists provide a powerful pull for any hoisting job. They are flexible and economical—enclosed against grit and water.*



# CAR SPOTTING HOISTS



Model HKL —  
rated 6000 lbs.  
pull at 25 ft. per  
minute, driven by  
a 5 HP motor.  
Has automatic  
mechanical hold-  
ing brake.

## **BROWN-FAYRO** *Model HKL* **HOIST** with explosion-proof electrical equipment!

by a 5 HP intermittent rated motor.  
on a grade.

Brown-Fayro specializes in the design and application of car spotting hoists, room hoists, portable blowers, gathering pumps, layer loading hoists, car retarders, mine cars, sheaves and rollers, rerailers and derailers. Write for recommendations. We have available a complete line to meet your specific requirements.

For use in gaseous atmospheres and for loading rates and rope pulls within its rating. Model HKL Hoist is furnished with explosion-proof motor, starter and push button. The starter, located adjacent to the hoist, is connected to the motor by a short length of cable with protecting hose. The push button is placed at the loading point.

Model HKL is rated 6000 lbs. normal pull at an average speed of 25 ft. per minute—driven by a 5 HP motor. An automatic mechanical brake holds the trip on a grade.

**THE BROWN-FAYRO**  
COMPANY  
JOHNSTOWN, PENNA.

# SOLVE WEAR PROBLEMS with STOODY HARD-FACING ALLOYS

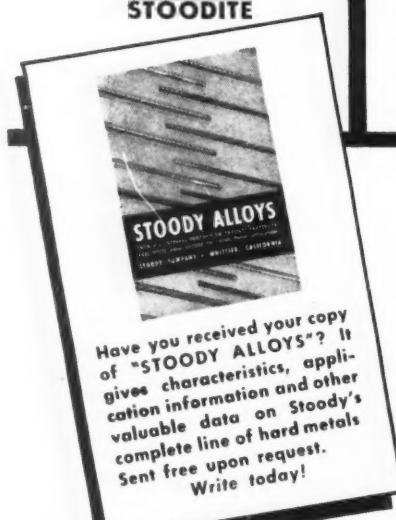
**Y**OU'LL GET more life from all wearing parts, increase production and cut maintenance costs by protecting wearing equipment with Stoody hard-facing alloys. No matter how diversified your problems, you'll find one Stoody alloy among the 12 available that's tailored for your exact need!

Here are only 4 of many outstanding Stoody alloys that make worthwhile savings on coal mining equipment. All are applicable with ordinary D.C. electric or oxy-acetylene welding equipment.



STOODY ALLOY	DESCRIPTION	TYPICAL COAL MINING APPLICATIONS
<b>BOROD and TUBE BORIUM</b>	Produce heterogeneous deposits of small tungsten carbide particles. Available in various screen sizes. Wear resistance is highest of all types of alloys.	Use BOROD or TUBE BORIUM on Auger points • Coal cutter bits • Churn drills and other heavily abraded equipment.
<b>STOODY SELF-HARDENING</b>	Deposits are homogeneous, possessing double the wear resistance of manganese with toughness to withstand heavy impact. Bonds well with manganese steels.	Use STOODY SELF-HARDENING on Conveyor bucket lips • Crusher teeth and segments • Cutter chain lugs and straps • Dipper parts and other equipment receiving abrasion and impact.
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**KEEP YOUR EQUIPMENT PRODUCING HERE**

**INSTEAD OF LOAFING HERE**

REPAIR SHOP

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## Install **ROCKBESTOS A.V.C. Cable** in **Cutters, Loaders and Locomotives**

You lose a lot more than the cost of cable and rewiring time when cable failures send your mining machines to the repair shop . . . your heavy loss is in the tonnage they *don't* take out which shows up in *increased* operating costs and *reduced* profits.

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Write for a sample of Rockbestos A.V.C. and see for yourself why it keeps production up and maintenance expense down.

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# What Bituminous Service Means to the coal industry



Service is not just a word to the mine owners and operators who have Workmen's Compensation Insurance with the Bituminous Casualty Corporation. To them, Bituminous Service stands for a saving in life and limb. It means man hours saved, lower costs, and greater production.

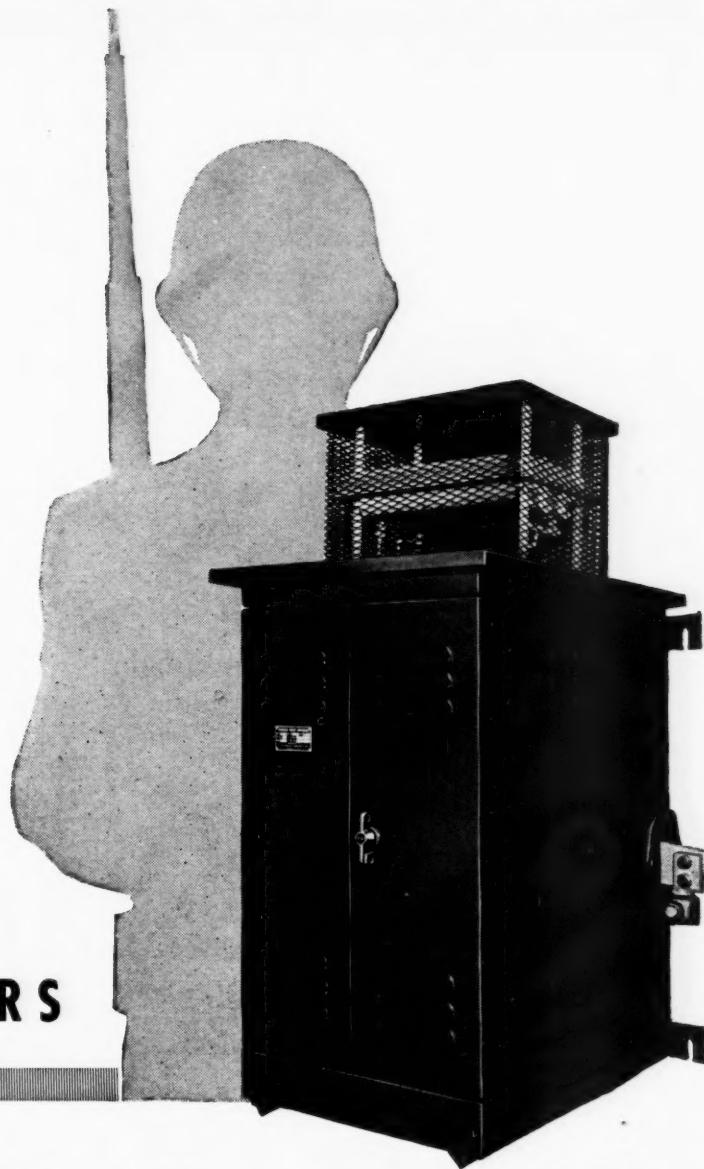
Bituminous has specialized in Workmen's Compensation for coal mines since its founding 28 years ago. Its expertly trained Safety Engineers have been constantly at work, both in the laboratory and in the field, to develop new and better safety measures.

Bituminous claim and mine inspection men are particularly well qualified to understand the problems of the coal industry. These specialists are just a part of the organization that continually strives to give the SECURITY WITH SERVICE, for which Bituminous is famous.

**ASSETS OVER \$14,000,000**

**BITUMINOUS CASUALTY  
CORPORATION**  
ROCK ISLAND  ILLINOIS

# I-T-E SECTIONALIZING CIRCUIT BREAKERS



## *Stand Guard against Mine Fires and Explosions*

No longer need tallen trolley wires be the chief cause of mine disasters. Nor need electrical disturbances start fires or hold up production throughout large areas of the mine. I-T-E Sectionalizing Circuit Breakers, installed throughout a mine, keep constant watch on load conditions in trolley and feeder circuits. They automatically open when currents become excessive and automatically close when line conditions return to normal. Although unattended, these sectionalizing circuit breakers are highly sensitive to disturbances on either side of them and separate substations quickly when trouble develops, so that a fault cannot be fed from a distant substation.

Safety is but a by-product of I-T-E Sectionalizing Circuit Breakers. By their use production is increased, power is used more economically and maintenance and repair of electrical equipment is decreased. These advantages realize savings which will pay for the installation in a short time. The safety features are, therefore, obtained at no cost.

*Write today for Bulletin 2503 which describes this equipment in detail or, if you have an immediate problem, call the nearest I-T-E representative for engineering information. The I-T-E Circuit Breaker Company, 19th & Hamilton Streets, Philadelphia 30, Pa.*

Application Engineers in Principal Mining Areas

# I-T-E AIR SWITCHGEAR





**5 Years  
of  
RELIABLE SERVICE**

*and*  
**NO MAINTENANCE  
for this  
1000 G.P.M.  
WARREN  
PUMP**

"Our Warren 1000 G.P.M. pump was installed five years ago, and handling very acidulous water, has operated to date with no expense for maintenance or repairs," writes the superintendent of a well-known bituminous coal company. "Its present condition is excellent and we do not hesitate to recommend Warren Pumps highly for dependability and low operating and maintenance costs."

## **AND HERE ARE SOME OF THE REASONS WHY USERS RECOMMEND WARREN PUMPS:**

### **CORRECT MATERIALS**

Standard Warren Pumps have iron casings with bronze impellers, shaft sleeves, case rings, and glands. Pumps can be furnished with all parts coming in contact with liquids made of acid-resisting bronze or chrome steel alloy.

### **SMOOTH PERFORMANCE**

Impellers are accurately balanced, insuring vibration-free performance. Shafts are finished by grinding and made exceptionally heavy to prevent deflection.

### **NON-CLOGGING**

Water passages are correctly and liberally pro-

portioned to handle suspended solids without trouble.

### **LONGER LIFE**

Low velocities mean less wear on casings.

### **REDUCED MAINTENANCE**

Bearings are of the split shell, heavy duty, ring-oiling type or full ball bearing. Labyrinth case wearing rings; water-sealed, deep stuffing boxes and split packing glands are used.

### **GREATER ACCESSIBILITY**

All interior parts are readily accessible without disturbing piping.

Warren Pumps installed on de-watering services in the bituminous fields of Pennsylvania and West Virginia alone are discharging to the surface approximately 75,000,000 gallons of water per day on heads varying up to 500 feet. Follow the example of many Warren-equipped mines and take advantage of the savings Warren Pumps make possible.

**FOR LONGER LIFE AND**

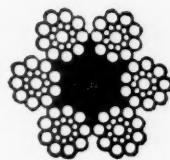
**GREATER DEPENDABILITY**

**WARREN STEAM PUMP CO., INC.**  
WARREN, MASSACHUSETTS

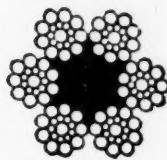


## RUBIES

Two rubies, one real, the other synthetic, may look alike, yet differ in value.



*and*



## ROPES

Two pieces of wire rope may be of identical construction yet differ in performance.

The purchaser of wire rope isn't buying wire rope, but the service that rope will render on the job. And wire rope performance is dependent not alone on its "construction" but upon the quality of the wire used in its manufacture.

Back of the long service which Wickwire Spencer Wire Rope renders is 125 years of experience. The steel is made in our own open hearth furnaces. This type of refining furnace removes all but absolute minimum quantities of harmful phosphorus and sulphur. It also permits blending of proper proportions of carbon and manganese to produce rope wire that meets exacting specifications. Only the heart of the steel ingot is used for rope wire. This is carefully rolled, drawn and processed to produce wire with the highest possible degree of hardness, strength, toughness and fatigue-resisting properties.

Every wire is drawn until it is accurate within a fraction of a thousandth of an inch . . . an important fact to remember since the performance and durability of wire rope is dependent upon accurate coordination of each component part.

Even though wire rope is tough, it is a delicate mechanism and as such is deserving of care to insure longer service. To help you get such service we have available an 82 page book packed with useful ideas for lengthening rope life. It's yours for the asking. And, if you have any problems regarding wire rope our engineers will be happy to help in their solution.



WICKWIRE SPENCER WIRE ROPE . . . IN ALL CONSTRUCTIONS FOR EVERY NEED

# WICKWIRE SPENCER

A DIVISION OF THE COLORADO FUEL AND IRON CORPORATION  
EXECUTIVE OFFICES — 500 FIFTH AVENUE, NEW YORK 18, N. Y.

Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Clinton (Mass.)  
Detroit • Houston • Los Angeles • Philadelphia • San Francisco • Tulsa • Worcester

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Steel



• BUILT BY  
THE JEFFREY  
MFG. CO.

## EASING *Underground* MOVEMENT!

All through the underground, where machines rely upon easily moving parts, **SKF** Bearings are rolling up enviable records of performance. On loaders, cutters, fans, drills, conveyors, pumps, motors, cars, spotting hoists—on all mine machinery above and below ground—the many advantages of **SKF** Bearings are apparent. A little lubricant now and then, and **SKF** Bearings are good for a long, useful life. Whether you need them for *new* machinery or to improve the performance of *old* machines, you'll find that **SKF** Bearings meet the most exacting requirements.

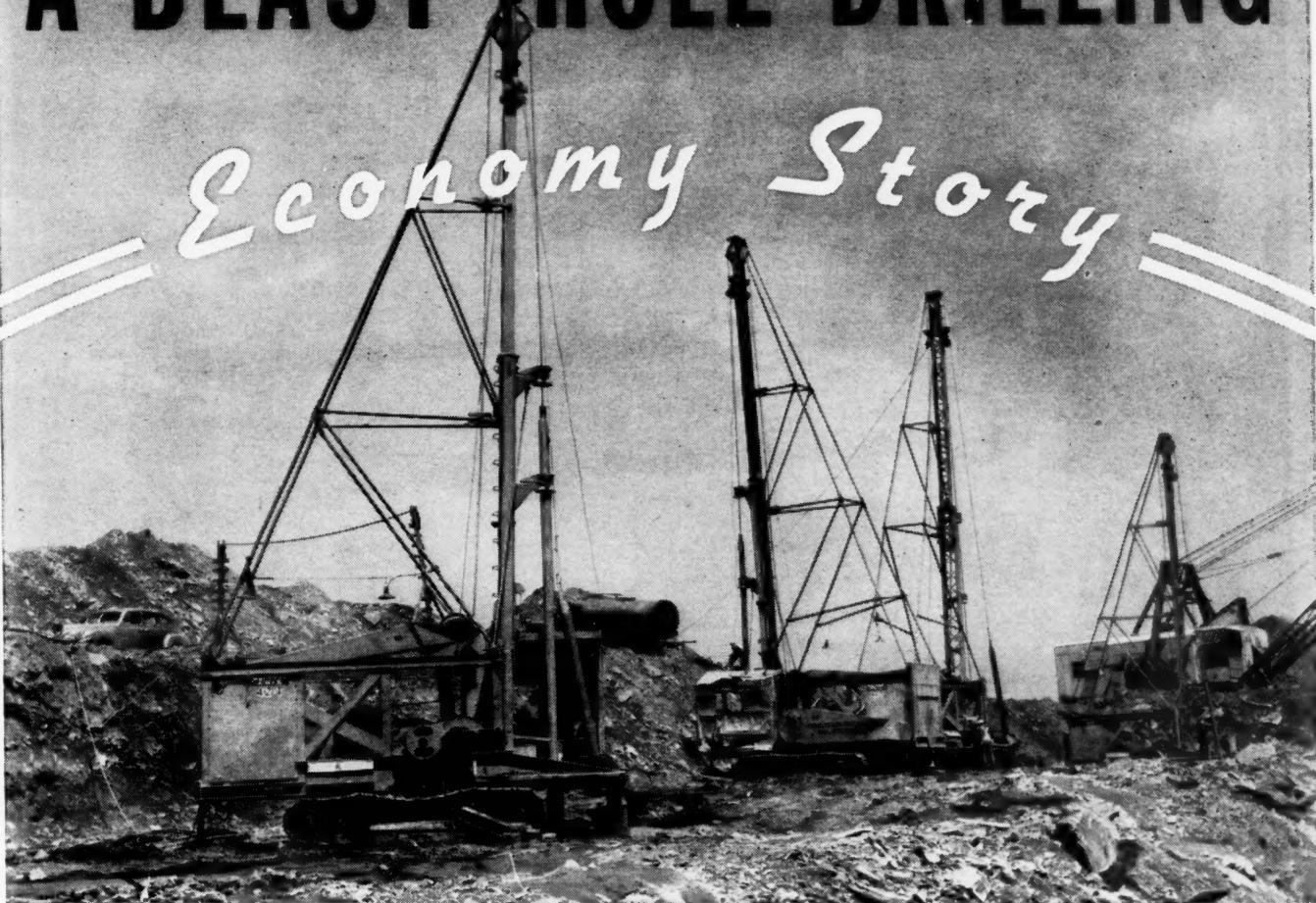
5962

**SKF** INDUSTRIES, INC., PHILA. 34, PA.



# A BLAST HOLE DRILLING

*Economy Story*



## Here are some of the important reasons why Bucyrus-Erie blast hole drills can help you realize greater savings on your drilling operations

● **GREATER FOOTAGE** — Bucyrus-Eries combine accurately-timed shock-absorbed drilling with appropriate tool weights to produce drilling blows that mean high-speed penetration. Quick pick-up of the tools adds to drilling effectiveness, permits maximum number of blows per minute.

● **FEWER HOLES** — Because Bucyrus-Eries permit drilling larger holes (6" to 12") than can be drilled with tripod or wagon drills, you can prepare the same volume of material with far fewer holes.

● **LOWER OPERATING COSTS** — Power units (gasoline, diesel, or electric, depending upon your requirements and the size of machine) provide ample power

to handle the tool string. Efficient application of power keeps fuel consumption low.

● **MORE DRILLING TIME** — Full length caterpillar mountings permit speedy moves between locations; permanently attached stabilizing jacks make set-ups easy and fast; built-in power tool wrenches (available on all except the 22-T) speed tool changes.

● **LESS MAINTENANCE ATTENTION** — Frame and derrick strength, obtained through all-steel electric-welded construction, resists the stresses of long continuous use. The derrick-head shock absorber and the rubber-insulated heel and spudding beam sheaves protect the machine from harmful shock.

DB46

It will pay you to investigate these models

**22-T for 5 $\frac{5}{8}$ " to 6 $\frac{5}{8}$ " holes**

**29-T for 9" holes**

**27-T for 6" to 6 $\frac{5}{8}$ " holes**

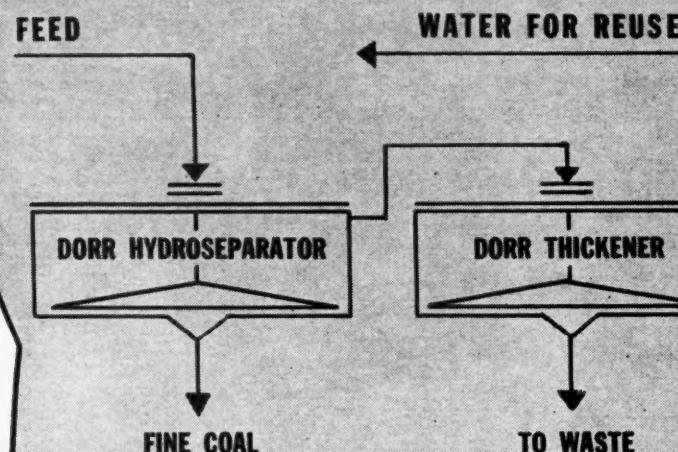
**42-T for 9" to 12" holes**

SO. MILWAUKEE

**BUCYRUS  
ERIE**

WISCONSIN

Here's a  
SOLUTION  
to stream  
POLLUTION



This simple flowsheet will eliminate stream pollution while recovering fine coal of marketable size.

This combination of Dorr Hydroseparator and Dorr Thickener performs two important jobs:

Used wash-water is clarified for re-use—a possible economy depending on certain local conditions.

Fine sizes of coal are recovered, which may be blended directly or treated further if required.

Stream pollution, loss of fine sizes, excessive costs—all three are eliminated with this one Dorr installation.



Upon request, a DORR engineer will visit your plant, study conditions and then make recommendations for equipment designed to meet your particular requirements.

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RESEARCH ■ ENGINEERING ■ EQUIPMENT

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A 17-YEAR VETERAN

S-A BELT CONVEYOR SYSTEM

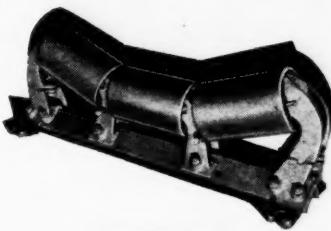


Section of 800-foot S-A belt conveyor showing SACON type roller-bearing carriers. Features of this typical S-A installation are ease of servicing and low operating cost.

One of the first completely mechanized coal mines in the country is S-A equipped for low cost, safe and efficient handling of more than 5,000 tons daily output.

The main unit of this time-and-cost-saving S-A installation is an 800-foot long Belt Conveyor. The belt travels over 234 SACON type roller-bearing carriers and 100 return rollers. It has an hourly capacity of 700 tons at a total elevation of 210 feet from loading point in mine to tipple. Other S-A belt conveyors operating in the tipple complete the installation.

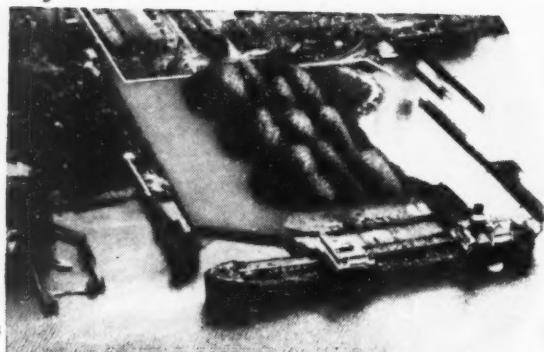
This belt conveyor is a typical example of the economy and practability of moving large tonnages in short operating periods and at rock-bottom operating costs.



S-A SACON carrier. Sturdy, fool-proof construction, with rollers turning on live shafts to reduce bearing travel and wear and insure years of productive, low-cost service. SACON carriers can be furnished with Timken roller bearings or single or double ball bearings depending on severity of service.

**STEPHEN S-ADAMSON**  
2 RIDGEWAY AVENUE, AURORA, ILLINOIS MFG. CO. LOS ANGELES, CALIF. ★ BELLEVILLE, ONT.

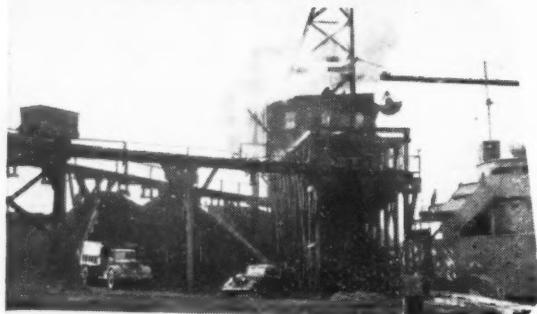
*Designers and Manufacturers of All Types of*  
**BULK MATERIAL HANDLING EQUIPMENT**



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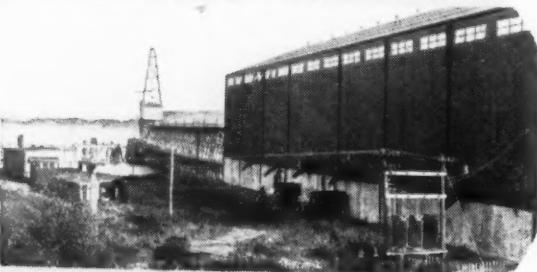
PROVIDENCE, R. I.



LYNN, MASS.



ALLYN'S POINT, CONN.



SANDY POINT, ME.

# Spotted... TO MEET THE NEEDS of MAJOR MARKETS

Boston and Lynn in Massachusetts — Providence in Rhode Island — Sandy Point in Maine — Allyn's Point in Connecticut.

The locations of Hartwell's distribution docks were carefully chosen at strategic points along the New England seaboard, to speed distribution and enhance our service to retailers and industrial consumers in each marketing area.

This network of coverage-centers represents a sizeable investment in modern facilities and equipment. But its value is inestimable as a vital force in the distributing and merchandising service we are enabled to render. It serves as a foundation for the activities of our sales force — it heightens our influence in the markets we cover — broadens our effectiveness to our suppliers.

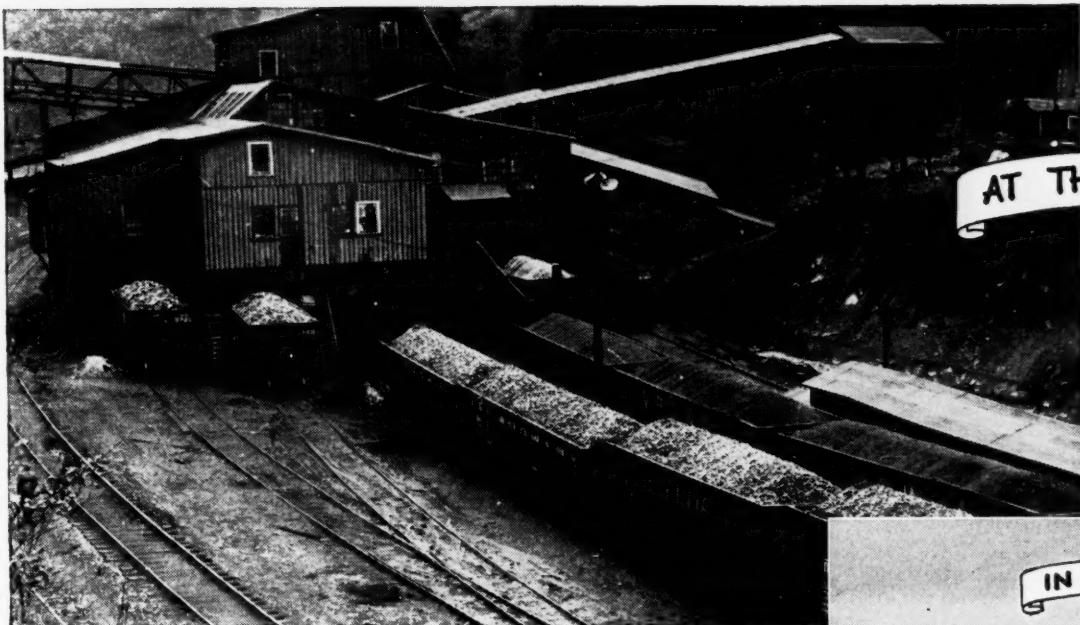
Despite wartime limitations, improvements have been made at some of these docks and two entirely new properties have been acquired.

We're ready for today's competitive conditions with the physical facilities. Ready too with an augmented sales force and a larger organization. Ready in fact to discuss the marketing and distribution situation in New England with a few additional suppliers who can meet the rigid standards of quality and performance of those whom we now serve.

Call — write or wire.

**H. N. HARTWELL & SON, Inc.**  
Dock Operators · COAL · Distributors  
Park Square Bldg. BOSTON, MASS.





## **CALCIUM CHLORIDE**

### **Stops Freezing—Holds Dust**

### **Wherever Coal Goes**

★ The calcium chloride Dustproofing-Freezeproofing treatment puts coal in condition to compete with other clean, odorless fuels in today's market.

★ Dustproofing saves housecleaning and redecoration. Dustproofing puts coal in the preferred fuel class—pleases customers.

★ Freezeproofing cuts unloading and reloading costs. It prevents much damage to railway and yard equipment. When you freezeproof coal, you protect the dealer's profit and deliver the grade you ship.

Calcium chloride has many other uses in mine operation such as dustproofing mine roadways, speeding up concrete work and thawing earth. Literature on all its uses is sent on request.

**CALCIUM CHLORIDE ASSOCIATION**  
4145 Penobscot Building • Detroit 26, Michigan



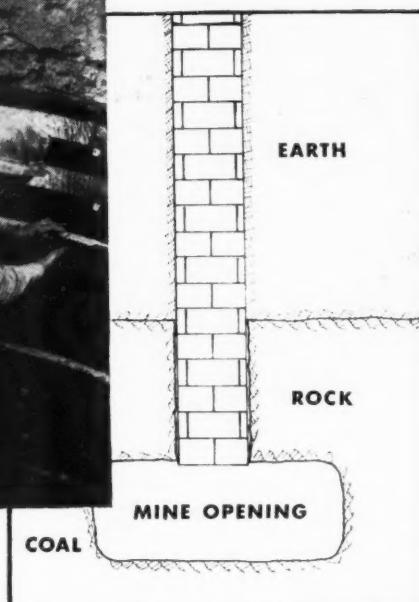
## **CALCIUM CHLORIDE**

**FREEZEPROOFS AND DUSTPROOFS IN 1 OPERATION**

# BUILD VERTICAL OR SLOPED OPENINGS THIS SIMPLE, SPEEDY WAY



Air shafts and escape-ways are built quickly and economically with ARMCO Tunnel Liner Plates.



Here's an easy, economical way to provide ventilation and safety as active workings extend from original mine openings. Simply use ARMCO Tunnel Liner Plates to sink new shafts.

These plates are amply strong and provide worthwhile durability and safety from fire hazards. One man easily handles the lightweight steel sections, bolting them together with regular wrenches. Costs are low and the job is speeded.

You'll find ARMCO Tunnel Liner Plates ideal for sloped entries, air shafts, escape-ways, substations and overcasts. Write for data on ARMCO Tunneling methods. Armco Drainage & Metal Products, Inc., and Associated Companies, Middletown, Ohio.



• • • • ARMCO TUNNEL LINER PLATES • • • •



## ACID RESISTING BRONZE

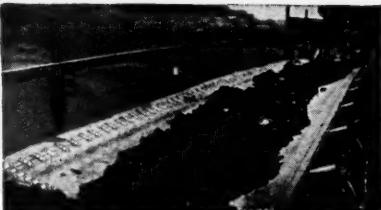
"Flood City" has been casting our own composition in our own foundry since 1907. There are, however, hundreds of different compositions for which various claims are made. For this reason, we, in connection with one of the large ingot manufacturers, recently concluded a comprehensive test of twenty different compositions all in actual use for mine pumps. We were glad to find our own mix superior to 18 and equal to the other one. This gives us added confidence in our claim that Flood City Pumps and Parts will give the best possible service in acid mine water.

**Flood City Brass & Electric Co.**  
Messenger & Elder Sts., Johnstown, Pa.

Branch Office: 4 Virginia St. W.; Charleston, W. Va.



• FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.



• Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.

• FLEXCO H D BELT FASTENERS make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent play separation. Six sizes in steel and alloys.

FLEXIBLE STEEL LACING COMPANY  
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your copy

**FLEXCO** **HD** **BELT FASTENERS**  
Sold by supply houses everywhere

# McLANAHAN BLACK DIAMOND CRUSHER

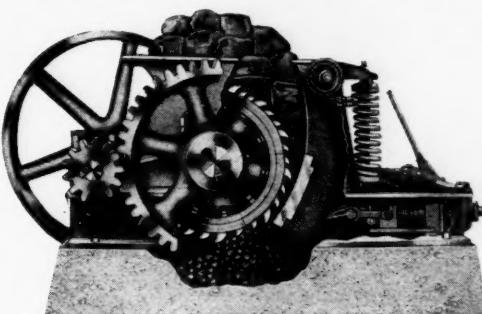
•With Automatic Steelstrut Toggle and Quick Adjustment

DEPENDABLE

FAST

ECONOMICAL

POWERFUL



Built for "peak" production under difficult working conditions—McLanahan Black Diamond Crushers are doing an outstanding performance job for hundreds of important

coal producers. For present needs or future modernization of your workings—call on McLanahan. Built in all capacities for any sized product required. Descriptive data on request.

## McLANAHAN AND STONE CORPORATION

Pit, Mine and Quarry Equipment Headquarters Since 1835

HOLLIDAYSBURG, PENNA.

# UNIT 514

*Speeds Up Coal Handling!*

Fast operating crawler type crane . . . maneuvers easily . . . combines LIFT ability, plus stability. Famous UNIT one-piece cast gear case . . . disc type clutches . . . automatic traction brakes. Low initial cost and low upkeep. Fully convertible. Write for literature.

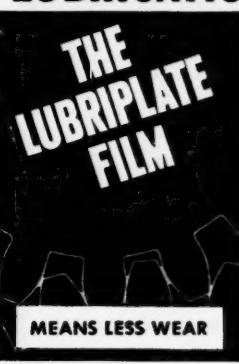
**FULL VISION CAB**  
Operator can see in ALL directions.  
Promotes safety. Increases efficiency.

**CAPACITY 5 TONS**  
 $\frac{3}{8}$  or  $\frac{1}{2}$  YD.



UNIT CRANE & SHOVEL CORP. MILWAUKEE 14,  
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## LUBRICATION IS INDUSTRY'S PRIME ESSENTIAL



MEANS LESS WEAR

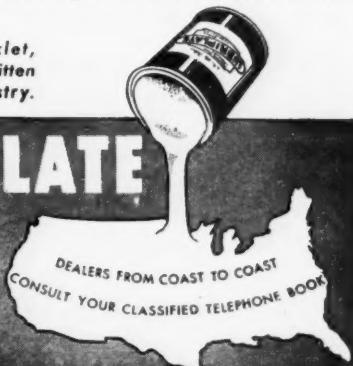
The enormous production of the past several years has not only proven the importance of proper lubrication, but has effectively demonstrated the superiority of LUBRIPLATE Lubricants. Even the most confirmed skeptic must admit that when two surfaces do not touch, there can be no appreciable wear. The separating film of LUBRIPLATE is tougher. That is why LUBRIPLATE Lubricants impart longer life to shafts, bearings and gears. LUBRIPLATE has qualities not possessed by conventional lubricants.

... Write for a booklet,  
"The LUBRIPLATE Film" written  
especially for your industry.

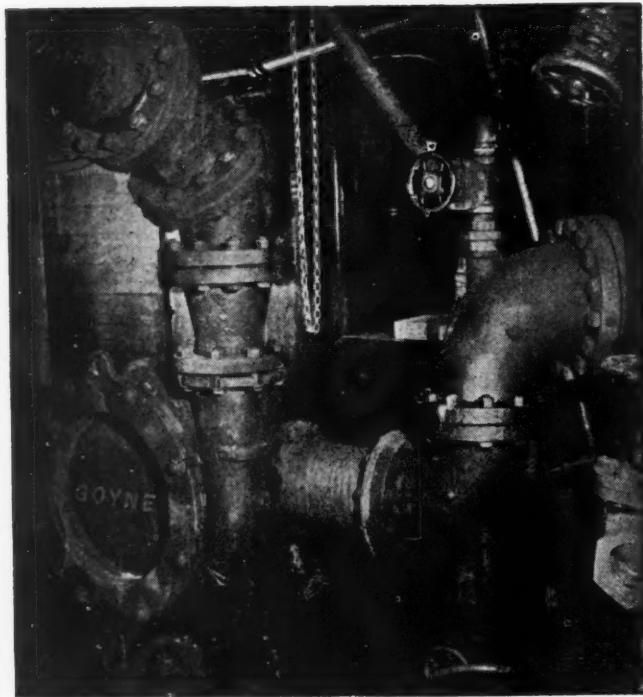
## LUBRIPLATE

FISKE BROTHERS  
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# GOYNE PROCESS PUMPS



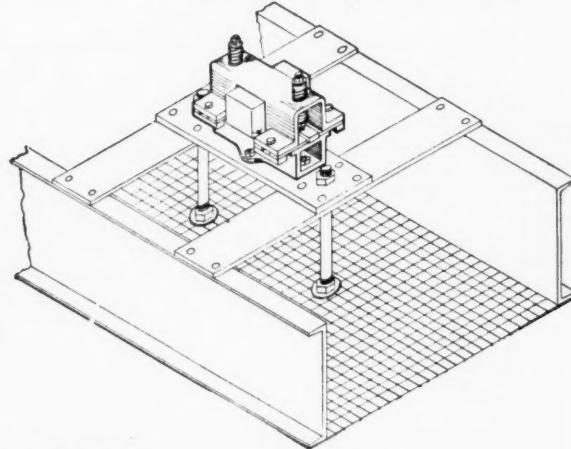
A Sand Pump is only a link in a chain in a coal washing plant, but it can be a strong link if it embodies the following features as does the Goyne:

1. Ease of inspection of all wearing parts. All internal portions are immediately accessible after removing only the rear head of the pump. No suction or discharge piping is disturbed.
2. The one packing box of the pump subjected only to suction pressure and is readily kept clean by a low pressure clear water line. Long packing and shaft sleeve life is assured.
3. Impeller clearance is adjusted *while the pump is running*, insuring constant pump capacity so essential for uniform washing.
4. There are twenty-eight possible nozzle assembly combinations for each standard pump. Washery designers like this "adaptability feature" as it helps them out of tight places and simplifies piping.
5. We carry the spare parts stock. Order your replacements when needed. Reduce your inventory by using Goyne Process Pumps.

*All inquiries receive prompt  
and careful attention.*

**THE GOYNE STEAM PUMP CO.**  
ASHLAND, PA.

## TROUBLED WITH BLINDING SCREENS?



APPLY A  
**SYNTRON**

"Pulsating Magnet"

## ELECTRIC VIBRATOR

and watch the fines go through!

*Write for catalog literature*

**SYNTRON CO.**, 975 Lexington, Homer City, Pa.



## HAMMOND'S Latest Type SAFETY EXPLOSIVE BOXES

Approved by Penna. Dept. of Mines

Boxes are constructed entirely of wood, having no metal parts. They are of tongue-grooved and dovetailed construction, having handle for carrying, and are equipped with automatic lock using rubber bands for a spring.

NOTE: There are NO metal parts . . . conforming to regulations of the Penna. Dept. of Mines.

Important: Prompt deliveries of these Hammond products: safety explosive boxes — wood tamping poles — shovel handles — rope rollers — trolley poles. Order today or write for further details.

### NET PRICES

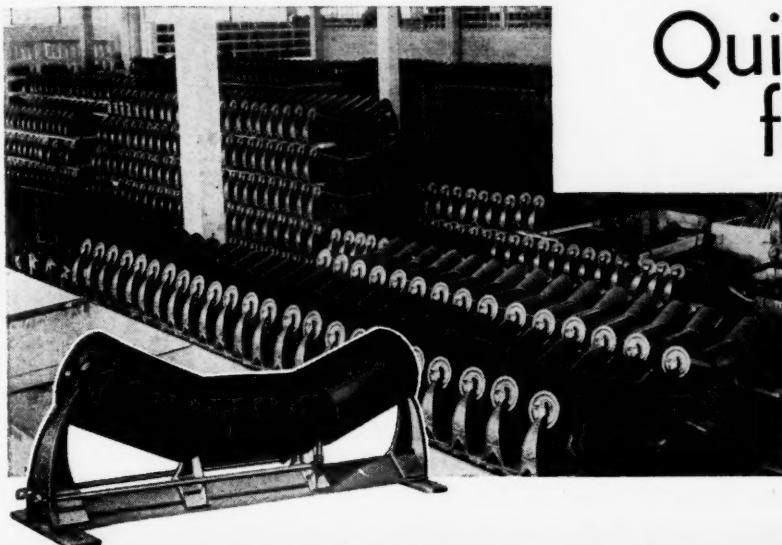
#### Boxes Made in These Sizes

No.	Powder Box	Stick size . . .	1.12
No. 12	" "	12 "	1.27
No. 16	" "	16 "	1.43
No. 20	" "	20 "	1.58
No. 36	" "	36 "	2.94
No. 72	" "	72 "	4.23
No. 6	Detonator Box	2 1/2 x 3 x 6 inside	1.01
No. 8	" "	2 x 2 1/2 x 8	1.01

**J. V. HAMMOND**  
SPANGLER, PENNA.

# Continental Belt Conveyor Idlers

## Quick Deliveries from Stock



Complete range of sizes, in Troughing, Picking Table and Flat Belt, equipped with Timken or SKF bearings.

*Write for Bulletin ID-105.*

50-B

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### IMPROVED SUTTON SAND DRYING STOVE

The same time tested principle for drying sand as used in Sutton STANDARD Sand Drying Stoves for more than forty years is employed in the No. 0 Sutton IMPROVED Sand Dryer.

#### NEW FEATURES

- PERFORATED RING of an entirely new design.
- A FIRE BOWL added between the grate and perforated ring. New type FIRE GRATE.
- ASH PIT DOOR EXTENSION to protect clean sand from ashes.
- 3/16" STEEL PERFORATED SKIRTING with clean out Doors



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Write today  
for FREE  
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... lowers drilling costs because it is designed and constructed to give more power "pound for pound" and more drilling efficiency "day after day". Used successfully in drilling both anthracite and bituminous coal. Easy to operate. Sold with money-back guarantee. Write today.

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Division of The R. K. LeBlond Machine Tool Co.  
2635 MADISON ROAD - CINCINNATI 8, OHIO

# HOBART brings you the arc control that assures Better Welds

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Even the apprentice can get professional welds with the Hobart "Simplified" Arc Welder. It's easy to get exact welding heat, thus increasing production speed—saving both time and money.

### DUAL CONTROL

With Hobart's Multi-Range Dual Control you have a choice of 1000 combinations of amperage and voltage, as-



suring the correct welding heat for every job.

### REMOTE CONTROL

Another exclusive Hobart feature permits the welder to adjust welding heat at the work, no matter how far he may be from the machine.

### EXCEPTIONAL STABILIZATION

Inherent reactance, a result of the special design of the Hobart Welding Generator, is responsible for arc stability for which Hobart is noted.

### BETTER GET HOBART NOW!

Let us give you further information and details.

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FREE!

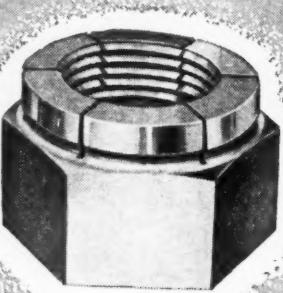
Valuable  
"Welder's Vest"  
Pocket Guide.  
Write for it.

**HOBART**

"One of the World's Largest Builders of Arc Welders."

Here's a Lock Nut  
that  
really  
holds!

**FLEXLOC**



Pat'd & Pat's Pend.

Search no more . . . This all-metal one-piece "Flexloc" Stop and Lock Nut has every desirable feature. Just look them over:

- ✓ It is of one-piece construction.
- ✓ It can be made of any of the conventional nut materials.
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- ✓ Its construction is especially advantageous for maximum

Sizes from #6 to 1" in diameter; millions in use. Write for Bulletin 582.

The famous "Unbrako" Socket Screw Products are also made by us.



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OVER 40 YEARS IN BUSINESS

## The greatest help a coal mining man can have—

**I**F YOU want to make sure of getting your certificate of competency—sure of winning a bigger job with bigger pay, get Beard's great books today and put them to work for you.

In these three books you have a practical, always-on-the-job guide that will help you solve the problems you face every day, show you what to do, tell you why it should be done.

## Beard's Mine Examination Questions and Answers!

3 volumes — \$7.50, payable in four monthly payments

**T**HESE books explain what a man must know in order to become a mine inspector, a mine foreman, assistant foreman, fireboss, hoisting engineer, safety engineer, shot-firer, etc.

They give you complete and authoritative information about air and gases, explosives, safety requirements and methods, mechanics, engines, hoisting, drainage, pumping, ventilation, timbering, instruments, and every other detail that the practical mining man must know.

### Can you answer these questions—

What is meant by splitting the air current and what are the advantages derived from such methods?

Can a miner live in air in which the oxygen content is reduced to 17 per cent?

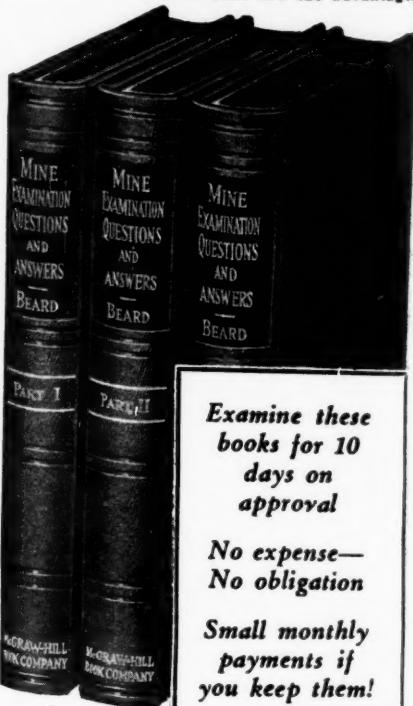
Name five duties imposed on mine foremen by law?

In what time can an engine of 40 effective hp. pump 4,000 cu. ft. of water from a shaft 360 feet deep?

What are the advantages and disadvantages of a gasoline pump, an air pump and an electrical pump?

What is the estimated tonnage per acre, per foot of thickness, for bituminous coal?

These are but a few of the more than 2000 questions given in Beard's books together with full correct answers. Hundreds of men have used this method to prepare for higher, better jobs. You can, too, if you have the Beard books and plan to use them systematically. They are the best investment that a mining man can make—not only as an aid for passing examinations but as practical reference volumes on everyday mining operation problems.



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C. 2-46

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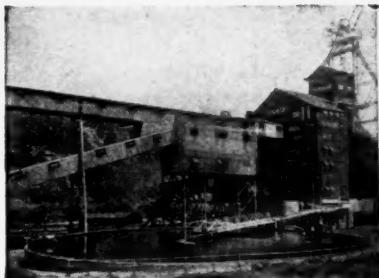
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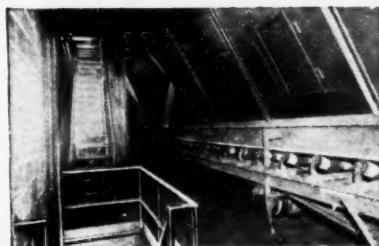
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30"	6	1/8"	— 1/16"	16"	4	1/8"	— 1/32"
30"	5	1/8"	— 1/16"	14"	4	1/16"	— 1/32"
24"	5	1/8"	— 1/32"	12"	4	1/16"	— 1/32"
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2	25	2200	110/220
1	37 1/2	2200	110/220
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30 HP Carlin double dr. fr. 13" x 18"—5 1/2" figs.

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dir. con. 10 HP AC Motor.

The above Hoists can be equipped with AC or DC Motors.

### COAL CRUSHERS

#### SLIP RING & SO. CG. MOTORS

HP Make Speed Wdg. Type

300 West. 1750 S.R. CW

150 G.E. 455 S.R. CS

125 West. 700 S.C. LM

100 West. 1750 S.R. CW

100 G.E. 500 S.R. MI-25 cy.

75 (2) West. Vert. 1750 S.C. CS 405

50 West. Vert. 1750 S.C. CS

40 G.E. 900 S.R. MTC

25 West. 575 S.R. CW

20 West. 1200 S.C. CS

Other sizes down to 1 HP

#### DC Motors and Generators 230/250 V.

HP Make Speed Wdg. Type

175 G.E. 475 ser. MD 109

150KW Cr. Wh. 550 ep. MD 109

130 G.E. 550 ser. CO 1812

100 G.E. 480 ser. MD 108

100 West. 625 ep. S

100 West. 670 sh. S

75KW West. 1000 ep. S

60 Cr. Wh. 800 ep. S

55 West. 950 ep. S

50KW Cr. Wh. 1050 ep. 185T

50 Reliance 1500 SK 301

40 Roth 1500 K 5

25 (2) West. 875 ser. SK

20 West. 750 ep. CM

15 Cr. Wh. 800 sh. S

15 West. 560 ep. CVC

7 1/2 G.E. 825 B 254

7 1/2 New West. Vert. 1750 sh. SK 284

3 New G.E. 1150 ep. B 254

### PUMPS

4" suc. 4" dis. Lee Courtney Cent.—dir. con. 40 HP

AC or DC Motor.

100 GPM 300' Head F. M. 2 stage, with 15 HP

F.M. Motor 220/440 v. Motor.

### AIR COMPRESSORS

9" x 8" Chg. Pneu. Type NSB 175 cu. ft. 100#.

1300 cu. ft. 100# Pres. Worthington 2 stage Belted.

## Pittsburgh 19, Pennsylvania

Serving the Coal Industry for more than a Quarter of Century

## FLORENCE MACHINERY & SUPPLY CO. COAL MINE EQUIPMENT & SUPPLIES

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1—Champion Garage Type, with 1 H.P., 230 Volts DC Motor & Receiver (one unit)  
1—8 1/2" x 4 1/4" x 5 C.P. Air Compressor, V-Belted to Mercury Power Unit, Semi-Portable

### COAL CUTTERS

1—Goodman Universal, 250 Volts DC  
1—Goodman Standard, 250 Volts DC  
7—Sullivan CE-7, 220 or 440 Volts AC  
1—29-LE Coal Cutter, 250 Volts DC, mounted on Joy Carts.

### PIT CARS

140—1 Ton R.B. Card, 36" Ga.  
119—1 Ton P.B. Card, 36" Ga.

### GENERATORS

1—100 KW Hertner, 250 Volts DC, direct con. to 150 H.P., 440 Volts Syn. Motor, with Switchboard  
1—100 KW G.E., 550 Volts, DC, with Board  
1—25 KW Crocker-Wheeler, 250 Volts DC, with Board

We have a complete stock of practically everything.

Write for Complete Stock List No. 8

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 Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia  
 Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

157-2

## SEARCHLIGHT SECTION

### LOCOMOTIVES

**Goodman:** All 250 volts.  
1-6 ton, 30B, 43" 1-5 ton.  
1-5 ton, W-1-2, 36".  
2-5 ton, 2600 K.  
2-6 ton, 33-1-4-T.  
2-8 ton, 32-1-4-T.  
**Westinghouse:** All 250 volt.  
1-4 ton, 902, 48".  
4-904 c. 44" 500 volt and 250 volt. Also  
906 motors and 102-904-115.  
1-10 ton, 915, and 907.  
Bar steel frames 10 ton, 6 ton, and 4 ton.  
**G.E.:** All 250 volt. 4 ton 1022, 44", as is  
6 ton 803, 44" as is 6 ton 825, 44" & 36"-  
6 ton 828, 44" 8 ton 839 motors  
6 ton 801  
8 ton 839  
Battery Locomotives G.E., Ironton, Atlas,  
Whitcomb and 1½ ton Mercury.  
**Jeffrey:** 6 ton and 4 ton, all gauges, 250 volt.  
8 ton, 250 and 500 volts, 10 ton. MH78-  
13 ton MH110, 500 volts.

**AERIAL TRAMWAYS • HOISTS • PUMPS • MOTORS • TRANSFORMERS • BOND WELDERS • RESISTANCE • COMPRESSORS • DUMPS • SPEED REDUCERS • FIELD FRAMES • ARMATURES • GOODMAN HYDRAULIC SHOVELS • MOTOR STARTERS AND CONTROLLERS • AC & DC • DROP BAR SUPPORTS (Goonie-neck), 29B and 29C • MINING MACHINE TRUCKS • SWITCHBOARDS • CIRCUIT BREAKERS • AC & DC • COAL CRUSHERS (double roll) 12" x 16", (single roll) 24" x 36", 24" x 24" • LATHE, SWITCHES • AUTOMATIC CIRCUIT BREAKERS 250 volt 600 amps to 2000 amps • MANUAL CIRCUIT BREAKERS 600 amps to 3000 amps • HOISTS, overhead, AC 3-50-440, 1 ton and 2 ton • I clam shell bucket 1½ cubic yard • MINE CARS • 2 SULLIVAN BIT SHARPENERS • R. R. SWITCHES 85½ to 100% • GENERATORS DC 250-275 volt, 30 KW to 100 KW. Also SPARE MOTORS DC and AC for mining machines and locomotives. BELT CONVEYORS, SLATE, LARRY. 2-14BU Joy Loaders, 250 v. on Cats. 1-8BU or Cats. 2-Myers-Whaley, #3 and #4 Automatic and other loaders. DIESEL POWER PLANTS, 50 KW to 250 KW**

### MINING MACHINES

**Jeffrey:** 35B and 4-28A, 250 V. 4-29B, 29C, 29CE with shearing head. Also I on cats. Revolving head for 29C.  
35B **Jeffrey** mining machine.  
1-35 BB AC 220 volt.  
**Goodman:** 12A, 12AB, 12AA, 12G3A, 24B.  
1-12 13 220 volt and 2-112 DA. 500 volt.  
2-Permissible Type 12CA. 6-112AA.  
Motors for 212AA, both 250 and 500 v.  
**Sullivan:** CE7, CE9, CE10, CR10 Low Vein. CR5 for middle cutting.

### SUBSTATIONS—275 volts, D. C.

2-200 KW G.E. Rotaries (600 volt).  
2-150 KW West. Rotary.  
1-200 KW 1-100 KW Ridgway M-G Sets.  
2-100 KW G.E. Rotary.  
1-200 K Westinghouse M-G Set 900 RPM,  
2300-270 volt.  
1-100 KW Westinghouse M-G Set.

### SPARE ARMATURES

**Jeffrey** MH 110, MH 78, MH 73, 29B, 35B and 28A. **Goodman** 34B, 30B, 30C, 12A, 2600 K and R, 12AB, 12AA, 33-1-4-T, 31-1-4-T, 32-1-4-T. **General Electric** 801, 803, 807, 819, 821, 825, 839. **Westinghouse** 904, 905, 906, 102, 907, YR2, 115. Also 200 KW **Westinghouse** Rotary Converted Armature, 250 V Bracket Type, 150 KW G. E., HCC Bracket Type, and 150 KW G. E., TC Pedestal Type. **Sullivan** CE6, CE7, CE9 and CE10.

## GUYAN MACHINERY COMPANY, Logan, W. Va.

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1-4-Ton Jeffrey, type MH-96, 250 volt, 44" gage with cable reel  
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1-6-Ton Goodman, 250 volt, type 30-C, 42 or 44" gage, with reel  
1-6-Ton Goodman, 250 volt, type 33-1-4-T, 44 or 48" gage, with reel  
1-6-Ton Goodman, 250 volt, type 32-0-4-T, 42" gage  
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Spare armatures for 30-C, 30-B and 32-0-4-T Locomotives and 1-MH-96 and 2-MH-78 Jeffrey's

### CUTTING MACHINES

1-29-C Jeffrey Arcwall, 250 volt, any gage  
1-29-B Jeffrey Arcwall, 250 volt, any gage  
1-28-B Jeffrey Shortwall, 250 volt, any gage  
2-12-AA Goodman Shortwalls, 250 volt, with or without trucks  
2-112-AA Goodman universals, 250 volt, with or without trucks  
1-CR-2 Sullivan Shortwall, 250 volt, low vein  
1-CE-7 Sullivan Shortwall, 250 volt  
2-35-L Jeffrey Shortwalls, 220/440 volt A.C.

### SUBSTATIONS

1-80-KW. Westinghouse M-G Set complete, 250 volt D.C. 2300 volt A.C.

1-100-KW. G.E. Rotary Converter, 275 volt

### MISCELLANEOUS

7-Goodman, type 85-A Pit car loaders, 250 volt  
3-Jeffrey, type 58-C Pit car loaders, 250 volt  
4-Low vein mine cars, 44" track gage  
10-300 and 400 ampere welding machines, G.E. Hobart, Lincoln  
1-150-HP. Otumwa hoist with 800' 1¼" rope, 220-440 volt motor and reversible drum controller, hydraulic brake, suitable for slope or shaft

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1-Goodman type 724 E J 250 volt, 9 ft. Cutter Bar with two chains, adjustable from 35" to 77" cut.

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DOUBLE DRUM HOIST  
1-50 HP Lidgerwood Double Drum Hoist, drums 24" x 24", good for 5000# RP and 4000 ft. of ½" rope, motor driven MOTORS • GENERATORS • TRANSFORMERS

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#### SHASTA DAM SAND AND GRAVEL PLANT EQUIPMENT

Including—  
**GOODYEAR 9-MILE-HAUL 36" SPECIAL CONVEYOR BELTING**  
16,000' of Belt Remaining With Idlers, Pulleys, and Drives

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Electric Motors, Line Equipment, Transformers, and Supplies  
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Pumps: Centrifugal, Deep-well, Steam, Dredge

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### For Immediate Shipment

215 all steel mine cars—80 new, remainder slightly used, end dump (may be easily changed to tight end for rotary dumping), 14" Timken bearing wheels, 42" gauge, 40" wheel base, 6' 6" overall width, 11' 6" overall length, 34" high above rail—loading end dropped to 28", capacity 124 cubic feet level full, equipped with semi-automatic spring couplers.

100 sets steel side boards to increase capacity of cars to four tons if desired.

One Phillips cross-over dump, 42" ga. new.

One heavy duty trip feeder—specification upon request.

One "Nolan" automatic cager.  
Three sheave wheels, 84" dia for 1½" rope.

Two Holmes self-dumping cages—used.  
One Holmes self-dumping cage—new.

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683 lin. ft. 1½" dia. 6x19 blue center hoisting rope.

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1-GE-7 Sullivan Shortwall Machine 220 Volts D.C.  
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1-2 in. Centrifugal pump, 115 ft. head, 220 Volt A.C.

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# SEARCHLIGHT SECTION

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### MOTOR GENERATOR SETS

- 1—100 KW 720 rpm. 250 v. West. Gen. dir. con. 2200 v. 3 ph. 60 cy. motor.
- 2—75 KW 250 v. West. Gens. dir. con. 440 v. 3 ph. 60 cy. AC Motors.
- 1—75 KW 850 rpm. 250/275 v. DC type SK West. Gen. dir. con. to 100 HP 850 rpm. 220 or 440 v. 3 ph. 60 cy. West. CCL Motor.
- 1—75 KW 850 rpm. 250/275 v. DC type DLC General Electric Gen. dir. con. to 100 HP 850 rpm. 220 or 440 v. 3 ph. 60 cy. West. CCL Motor.
- 2—65 KW 1800 rpm. 250 v. G.E. Gens. dir. con. 220/440 v. 3 ph. 60 cy. AC Motors.
- 1—50 KW 250 v. DC Gen. dir. con. 220/440 v. 3 ph. 60 cy. AC Motor.
- 1—40 KW West. 250 v. DC Gen. dir. con. 220/440 v. 3 ph. 60 cy. AC Motor.
- 1—30 KW 250 v. DC cp.wd. Gen. dir. con. 220/440 v. 3 ph. 60 cy. AC Motor.
- 2—25 KW 250 v. DC West. Gens. dir. con. 220/440 v. 3 ph. 60 cy. Motors.

### MINE LOCOMOTIVES

- 1—5 ton Ironton Storage Battery Locomotive.
- 1—13 ton Westinghouse 42" ga. 250 v. Locomotive, two motor type; single end control.

### PUMPS

- 1—Amer. Piston Pump—5½ x 1½" size 8x12.
- 1—48 GPM 161' hd. Roper 3" suc. 3" dis.
- 1—90 GPM 225 ft. head, 600 rpm. 2x2" Blackmer.
- 1—220 GPM 225 ft. head, 600 rpm. 3½" x 3" Blackmer.
- 1—30 GPM Amer. Steam Pump Co. 150' hd. 5½" intake x 4½" discharge, 45 rpm.

DUQUESNE ELECTRIC & MFG. CO., PITTSBURGH (6), PA.

### MINE FANS

Robinson 7' HSPC. Centrifugal with 50 HP KT-346 Motor, compensator and V-belt drive.

Jeffrey Aerodyne 42". Type 8H-42, adjusted pitch, V-belt drive. Jeffrey 6' Centrifugal.

Harizell Propeller Fan, Size AT-76-CMF Ring # 14402. Propeller # A-964 with Motor 3 Phase 220 Volt Speed 880-430. H.P. 50-16½.

GUYAN MACHINERY COMPANY  
Logan, West Virginia

### MINING MACHINES

AC & DC

### REBUILT & GUARANTEED FOR IMMEDIATE SHIPMENT

#### COAL CRUSHERS

Single & Double Roll

Electric Coal Drills, Mine Fans, Tipple Scales, etc.

Ironton 5-ton Storage Battery Locomotives 36" or 42" Gauge, with or without batteries

Equipment of all kinds  
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America's Best Stock

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For prompt action, wire specifications collect  
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- 2—500 GPM Morris Machine Wks. 4" suc. 4" dis. 123' hd. 1760 rpm.
- 1—500 GPM Ingersoll Rand "Cameron" 4" suc. 3" dis. 1750 rpm.
- 1—3000 GPM De Laval 144' hd. 150 HP.

### SLIPRING MOTORS—3 ph. 60 cy.

HP	Make	Type	Volts	RPM
700	G.E.	MT-432	2200	393
260	Burke	EMV-65	440	600
75	G.E.	I	220/440	1200
60	West.	CW	220	1800
50	West.	HF	220/440	1120
50	Chand.		220/440	1800
15	G.E.	I-8	440	845
10	G.E.	MTC-5201	220	1200

### 230 V. DC MOTORS

HP	Make	RPM	Type
100	West.	300 700	SK
85	West.	500	M
80	West.	490	76A
75	G.E.	600	MP
75	West.	800	M
25	Hawthorn	475	HL
25	Rellance	850	
20	West.	975	S
20	West.	1750	SK
15	Al. Ch.	800	
13	Cr. Wh.	1100	CM
10	Cr. Wh.	675	CCM
10	Cr. Wh.	825	CM
5	West.	850	
5	Cr. Wh.	980	CM

No.	Kva.	Pr.	Sec.	Make
9	5	2200	110/220	G.E. & West.
85	7½	2200	110/220	G.E. & West.
16	10	2200	110/220	G.E. & West.
21	15	2200/1100	440/220/110	West.
3	15	2200	110/220	Packard
3	20	2200	110/220	Cr. Wh.
1	20	1150	2300	Maloney
2	20	2200/1100	440/220/110	West.
6	37½	2400	240/480	G.E.
3	40	2200/1100	220/110	Pittsburgh
1	40	1100/220	110/220	Maloney
1	40	2300/1150	115/230	Packard
2	50	2200	110/220	Allis Chal.
1	50	6600	550/440	West.
2	50	2200/1100	220/110	Maloney
1	75	2400	240/480	G.E.
3	100	2400	480	Allis Chal.
3	125	2200	220/440	G.E.
2	150	2200/2300/2400	220/230/240	West.
3	250	6600/5940	2300	

### TRANSFORMERS

### DIESEL ENGINE GENERATOR SET

1—50 kw. 250 v. DC Gen. dir. conn. to 65 HP Primus Diesel Hor. Engine.

### COMPRESSORS

2—315 CFM Ingersoll Rand portable 100# pres. driven by 105 HP Waukesha Oil Engines, 860 rpm.

## —TRANSFORMERS—



- 3—833 KVA 13200—240/480 V.
- 2—1000 KVA 2300—460/2300 V. scott taps
- 3—667 KVA 6900/12000Y—2300 V.
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- 9—75 KVA 3300—2400 V.

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Several Millions of Feet—in reels and coils

From single (solid or strand) conductors to patterns of 30 conductors. Some rubber and some resin insulation. Some sheathed with flame-proof braid and some with braided metal—others lead sheathed.

Made by leading American manufacturers in accordance with exacting technical

specifications for the British Admiralty to be used for electric light and power circuits, telephone circuits, welding, battery circuits, switchboard wiring and degaussing, in the equipping and repairing of ships. Material is unused—condition may be determined by inspection.

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Contains complete description of items and photographs of types, and details of submitting offers to purchase on or before February 21, 1946. Call, telephone, wire or write for "Electrical Wire and Cable Booklet".

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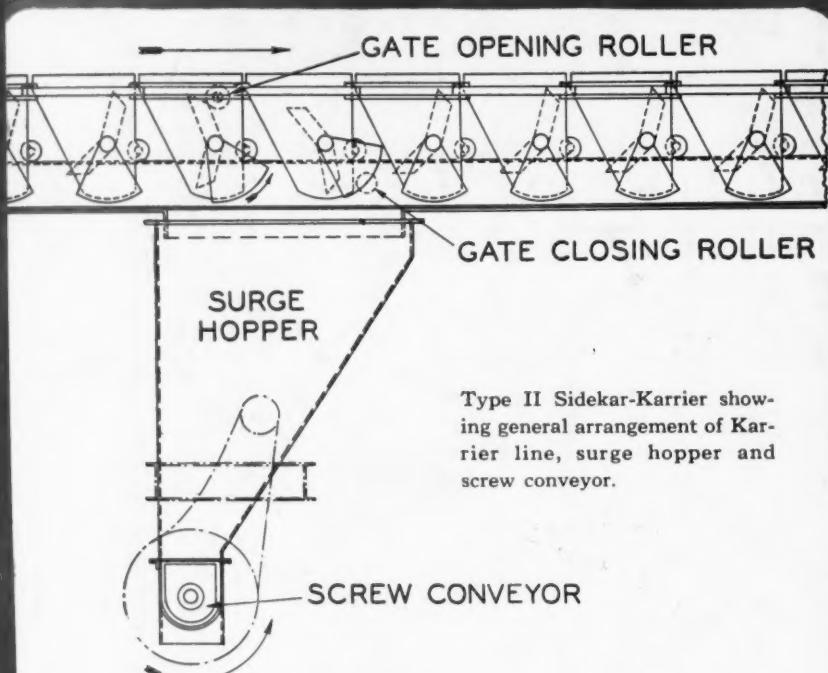


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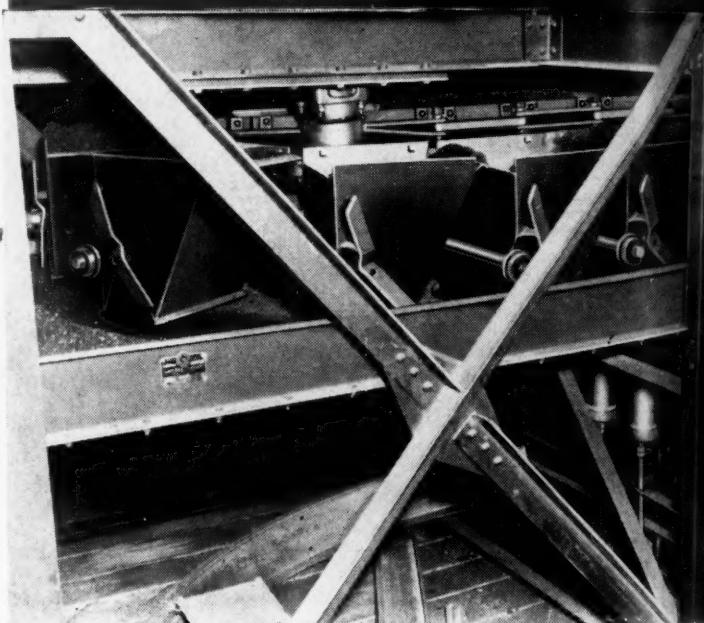
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Type II Sidekar-Karrier showing general arrangement of Karrier line, surge hopper and screw conveyor.

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